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PART 40

DOMESTIC LICENSING OF SOURCE MATERIAL

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Authority: Secs. 62, 63, 64, 65, 81, 161, 182, 183, 186, 68 Stat. 932, 933, 935, 948, 953, 954, 955, as amended, secs. 11e(2), 83, 84, Pub. L. 95-604, 92 Stat. 3033, as amended, 3039, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2014(e)(2), 2092, 2093, 2094, 2095, 2111, 2113, 2114, 2201, 2232, 2236, 2282); sec. 274, Pub. L. 86-373, 73 Stat. 688 (42 U.S.C. 2021); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 40.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 40.31(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 40.46 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 40.71 also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 40.3, 40.25(d)(1)-(3), 40.35(a)-(d), 40.41 (b) and (c), 40.46, 40.51 (a) and (c), and 40.63 are issued under sec. 161b., 68 Stat. 948, as amended (42 U.S.C. 2201(b)); and §§ 40.25 (c) and (d) (3) and (4), 40.26(c)(2), 40.35(e), 40.42, 40.61, 40.62, 40.64, and 40.65 are issued under sec. 161o., 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

50 FR 12221

§ 40.1 Purpose.

(a) The regulations in this part establish procedures and criteria for the issuance of licenses to receive title to, receive, possess, use, transfer, or deliver source and byproduct materials, as defined in this part, and establish and provide for the terms and conditions upon which the Commission will issue such licenses. The regulations in this part also establish certain requirements for the physical protection of import, export, and transient shipments of natural uranium. (Additional requirements applicable to the import and export of natural uranium are set forth in Part 110 of this chapter.) The regulations in this part do not establish procedures and criteria for the issuance of licenses for materials covered under Title I of the Uranium Mill Tailings Radiation Control Act of 1978 (92 Stat. 3021).

44 FR 50612

(b) The regulations contained in this Part are issued pursuant to the Atomic Energy Act of 1954, as amended (68 Stat. 919), Title II of the Energy Reorganization Act of 1974 (88 Stat. 1242), and Title II of the Uranium Mill Tailings Radiation Control Act of 1978 (42 U.S.C. 7901).

26 FR 284

§ 40.2 Scope.

Except as provided in §§ 40.11 to 40.14, inclusive, the regulations in this part apply to all persons in the United States.

45 FR 65521

§ 40.2a Coverage of inactive tailings sites.

(a) Prior to the completion of the remedial action, the Commission will not require a license pursuant to this Part for possession of byproduct material as defined in this Part that is located at a site where milling operations are no longer active, if the site is designated a processing site covered by the remedial action program of Title I of the Uranium Mill Tailings Radiation Control Act of 1978. The Commission will exert its regulatory role in remedial actions primarily through concurrence and consultation in the execution of the remedial action pursuant to Title I of the Uranium Mill Tailings Radiation Control Act of 1978.

(b) The Commission will regulate byproduct material as defined in this Part that is located at a site where milling operations are no longer active, if such site is not covered by the remedial action program of Title I of the Uranium Mill Tailings Radiation Control Act of 1978. The criteria in Appendix A of this Part will be applied to such sites.

§ 40.3 License requirements.

No person subject to the regulations in this Part shall receive title to, own, receive, possess, use, transfer, or deliver byproduct material as defined in this Part or any source material after removal from its place of deposit in nature, except as authorized in a specific or general license issued by the Commission pursuant to the regulations in this Part.

26 FR 284

§ 40.4 Definitions.

As used in this part:

(a) "Act" means the Atomic Energy Act of 1954 (68 Stat. 919), including any amendments thereto;

44 FR 50012 (a-1) "Byproduct Material" means the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content, including discrete surface wastes resulting from uranium solution extraction processes. Underground ore bodies depleted by such solution extraction operations do not constitute "byproduct material" within this definition.

26 FR 284 (b) "Commission" means the Nuclear Regulatory Commission or its duly authorized representatives;

45 FR 14199 (b-1) "Department" and "Department of Energy" means the Department of Energy established by the Department of Energy Organization Act (Pub. L. 95–91, 91 Stat. 565, 42 U.S.C. 7101 *et seq.*) to the extent that the Department, or its duly authorized representatives, exercises functions formerly vested in the U.S. Atomic Energy Commission, its Chairman, members, officers and components and transferred to the U.S. Energy Research and Development Administration and to the Administrator thereof pursuant to sections 104 (b), (c) and (d) of the Energy Reorganization Act of 1974 (Pub. L. 93–438, 88 Stat. 1233 at 1237, 42 U.S.C. 5814) and retransferred to the Secretary of Energy pursuant to section 301(a) of the Department of Energy Organization Act (Pub. L. 95–91, 91 Stat. 565 at 577–578, 42 U.S.C. 7151).

26 FR 284 (c) "Government agency" means any executive department, commission, independent establishment, corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government;

(d) "License", except where otherwise specified, means a license issued pursuant to the regulations in this part;

44 FR 50012 (e) "Persons" means (1) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency other than the Commission or the Department of Energy except that the Department of Energy shall be considered a person within the meaning of the regulations in this Part to the extent that its facilities and activities are subject to the licensing and related regulatory authority of the Commission pursuant to section 202 of the Energy Reorganization Act of 1974 (88 Stat. 1244)[1] and the Uranium Mill Tailings Radiation Control Act of 1978 (92 Stat. 3021), any State or any political subdivision of, or any political entity within a State, any foreign government or nation or any subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent or agency of the foregoing.

26 FR 284 (f) "Pharmacist" means an individual registered by a state or territory of the United States, the District of Columbia or the Commonwealth of Puerto Rico to compound and dispense drugs, prescriptions and poisons.

(g) "Physician" means an individual licensed by a state or territory of the United States, the District of Columbia or the Commonwealth of Puerto Rico to dispense drugs in the practice of medicine.

(h) "Source Material" means (1) uranium or thorium, or any combination thereof, in any physical or chemical form or (2) ores which contain by weight one-twentieth of one percent (0.05%) or more of (*i*) uranium, (*ii*) thorium or (*iii*) any combination thereof. Source material does not include special nuclear material.

[1] The Department of Energy facilities and activities identified in section 202 are:

(1) Demonstration Liquid Metal Fast Breeder reactors when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(2) Other demonstration nuclear reactors, except those in existence on January 19, 1975, when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(3) Facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from licensed activities.

(4) Retrievable Surface Storage Facilities and other facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive waste generated by the Department of Energy, which are not used for, or are part of, research and development activities.

31 FR 15145 (i) "Special nuclear material" means (1) plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 51 of the Act, determines to be special nuclear material; or (2) any material artificially enriched by any of the foregoing;

45 FR 18905 (j) "United States," when used in a geographical sense, includes all territories and possessions of the United States, and Puerto Rico;

26 FR 284 (k) "Unrefined and unprocessed ore" means ore in its natural form prior to any processing, such as grinding, roasting or beneficiating, or refining;

44 FR 50012 (l) With the exception of "byproduct material" as defined in Section 11e. of the Act, other terms defined in Section 11 of the Act shall have the same meaning when used in the regulations in this Part.

40 FR 8774 (m) "Agreement State" means any State with which the Atomic Energy Commission or the Nuclear Regulatory Commission has entered into an effective agreement under subsection 274b. of the Atomic Energy Act of 1954, as amended.

37 FR 5745 (n) "Commencement of construction" means any clearing of land, excavation, or other substantial action that would adversely affect the natural environment of a site but does not include changes desirable for the temporary use of the land for public recreational uses, necessary borings to determine site characteristics or other preconstruction monitoring to establish background information related to the suitability of a site or to the protection of environmental values.

41 FR 53330 (o) "Depleted uranium" means the source material uranium in which the isotope uranium–235 is less than 0.711 weight percent of the total uranium present. Depleted uranium does not include special nuclear material.

44 FR 50012 (p) "Uranium Milling" means any activity that results in the production of byproduct material as defined in this Part.

45 FR 50705 (q) "Effective kilogram" means (1) for the source material uranium in which the uranium isotope uranium–235 is greater than 0.005 (0.5 weight percent) of the total uranium present: 10,000 kilograms, and (2) for any other source material: 20,000 kilograms.

50 FR 12221

(r) "Transient shipment" means a shipment of nuclear material, originating and terminating in foreign countries, on a vessel or aircraft that stops at a United States port.

48 FR 16030

§ 40.5 Communications.

(a) Unless otherwise specified or covered under the regional licensing program as provided in paragraph (b) of this section, any communication or report concerning the regulations in this part and any application filed under these regulations may be submitted to the Commission as follows:

(1) By mail addressed to: Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

(2) By delivery in person to the Commission's offices to the Director, Office of Nuclear Material Safety and Safeguards at:

(i) 1717 H Street, N.W., Washington, D.C.; or

(ii) 7915 Eastern Avenue, Willste Building, Silver Spring, Maryland.

50 FR 14692

(b) The Commission has delegated to the five Regional Administrators licensing authority for selected parts of its decentralized licensing program for nuclear materials as described in paragraph (b)(1) of this section. Any communication, report, or application covered under this licensing program must be submitted as specified in paragraph (b)(2) of this section.

(1) The delegated licensing program includes authority to issue, renew, amend, cancel, modify, suspend, or revoke licenses for nuclear materials issued pursuant to 10 CFR Parts 30 through 35, 40, and 70 to all persons except the United States Air Force and Navy for academic, medical, and industrial uses, with the following exceptions:

(i) Activities in the fuel cycle and special nuclear material in quantities sufficient to constitute a critical mass in any room or area. This exception does not apply to license modifications relating to termination of special nuclear material licenses that authorize possession of larger quantities when the case is referred for action from NRC's Headquarters to the Regional Administrator.

(ii) Health and safety design review of sealed sources and devices, and approval, for licensing purposes, of sealed sources and devices.

(iii) Processing of source material for extraction of metallic compounds (including Zirconium, Hafnium, Tantalum, Titanium, Niobium, etc.).

(iv) Distribution of products containing radioactive material to persons exempt pursuant to 10 CFR 32.11 through 32.26.

(v) New uses or techniques for use of byproduct, source, or special nuclear material.

(2) *Submissions.* (i) *Region I.* With the exception of the United States Air Force and Navy, the regional licensing program involves all Federal facilities in the region and non-Federal licensees in the following Region I non-Agreement States and the District of Columbia: Connecticut, Delaware, Maine, Massachusetts, New Jersey, Pennsylvania, and Vermont. All inquiries, communications, and applications for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region I, Nuclear Material Section B, 631 Park Avenue, King of Prussia, Pennsylvania 19406.

50 FR 14692

(ii) *Region II.* With the exception of the United States Air Force and Navy, the regional licensing program involves all Federal facilities in the region and non-Federal licensees in the following Region II non-Agreement states and territories: Virginia, West Virginia, Puerto Rico, and the Virgin Islands. All inquiries, communications, and applications for a new license or an amendment to an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region II, Material Radiation Protection Section, 101 Marietta Street, NW, Suite 2900, Atlanta, Georgia 30323

(iii) *Region III.* With the exception of the United States Air Force and Navy, the regional licensing program involves all Federal facilities in the region and non-Federal licensees in the following Region III non-Agreement States: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. All inquiries, communications and applications for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region III, Material Licensing Section, 799 Roosevelt Road, Glen Ellyn, Illinois 60137.

(iv) Region IV. With the exception of the United States Air Force and Navy, the regional licensing program involves all Federal facilities in the region and non-Federal licensees in the following Region IV non-Agreement States: Montana, Oklahoma, South Dakota, and Wyoming. All inquiries, communications, and applications for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region IV, Material Radiation Protection Section, 611 Ryan Plaza Drive, Suite 1000, Arlington, Texas 76011.

50 FR 14692

(v) *Region V.* With the exception of the United States Air Force and Navy, the regional licensing program involves all Federal facilities in the region and non-Federal licensees in the following Region V non-Agreement States and a territory: Alaska, Hawaii, and Guam. All inquiries, communications and applications for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region V, Material Radiation Protection Section, 1450 Maria Lane, Suite 210, Walnut Creek, California 94596.

26 FR 284

§ 40.6 Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

47 FR 30452

§ 40.7 Employee protection.

(a) Discrimination by a Commission licensee, an applicant for a Commission license, or a contractor or subcontractor of a Commission licensee or applicant against an employee for engaging in certain protected activities is prohibited. Discrimination includes discharge and other actions that relate to compensation, terms, conditions, and privileges of employment. The protected activities are established in Section 210 of the Energy Reorganization Act of 1974, as amended, and in general are related to the administration or enforcement of a requirement imposed under the Atomic Energy Act or the Energy Reorganization Act.

(1) The protected activities include but are not limited to—

(i) Providing the Commission information about possible violations of requirements imposed under either of the above statutes;

(ii) Requesting the Commission to institute action against his or her employer for the administration or enforcement of these requirements; or

(iii) Testifying in any Commission proceeding.

(2) These activities are protected even if no formal proceeding is actually initiated as a result of the employee

assistance or participation.

(3) This section has no application to any employee alleging discrimination prohibited by this section who, acting without direction from his or her employer (or the employer's agent), deliberately causes a violation of any requirement of the Energy Reorganization Act of 1974, as amended, or the Atomic Energy Act of 1954, as amended.

(b) Any employee who believes that he or she has been discharged or otherwise discriminated against by any person for engaging in the protected activities specified in paragraph (a)(1) of this section may seek a remedy for the discharge or discrimination through an administrative proceeding in the Department of Labor. The administrative proceeding must be initiated within 30 days after an alleged violation occurs by filing a complaint alleging the violation with the Department of Labor, Employment Standards Administration, Wage and Hour Division. The Department of Labor may order reinstatement, back pay, and compensatory damages.

47 FR 30452

(c) A violation of paragraph (a) of this section by a Commission licensee, an applicant for a Commission license, or a contractor or subcontractor of a Commission licensee or applicant may be grounds for—

(1) Denial, revocation, or suspension of the license.

(2) Imposition of a civil penalty on the licensee or applicant.

(3) Other enforcement action.

(d) Actions taken by an employer, or others, which adversely affect an employee may be predicated upon nondiscriminatory grounds. The prohibition applies when the adverse action occurs because the employee has engaged in protected activities. An employee's engagement in protected activities does not automatically render him or her immune from discharge or discipline for legitimate reasons or from adverse action dictated by non-prohibited considerations.

(e) Each licensee and each applicant shall post Form NRC–3, "Notice to Employees," on its premises. Posting must be at locations sufficient to permit employees protected by this section to observe a copy on the way to or from their place of work. Premises must be posted not later than 30 days after an application is docketed and remain posted while the application is pending before the Commission, during the term of the license, and for 30 days following license termination.

Note.—Copies of Form NRC–3 may be obtained by writing to the Regional Administrator of the appropriate U.S. Nuclear Regulatory Commission Regional Office listed in Appendix D, Part 20 of this chapter or the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

47 FR 30452

(f) The general licenses provided in §§ 40.21, 40.22, and 40.25 are exempt from paragraph (e) of this section.

§ 40.8 Information collection requirements: OMB approval.

49 FR 19623

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). OMB has approved the information collection requirements contained in this part under control number 3150–0020.

(b) The approved information collection requirements contained in this part appear in §§ 40.25, 40.26, 40.31, 40.35, 40.42, 40.61, 40.64, 40.65, and Appendix A.

(c) This part contains information collection requirements in addition to those approved under the control number specified in paragraph (a) of this section. These information collection requirements and the control numbers under which they are approved are as follows:

(1) In §§40.31, 40.43, 40.44, and Appendix A, Form NRC–2 is approved under control number 3150–0019.

(2) In § 40.31, Form N–71 is approved under control number 3150–0056.

(3) In § 40.42, Form NRC–314 is approved under control number 3150–0028.

(4) In § 40.64, Form NRC–741 is approved under control number 3150–0003.

for licensing of Department facilities and activities pursuant to section 202 of the Energy Reorganization Act of 1974 or the Uranium Mill Tailings Radiation Control Act of 1980, any prime contractor or subcontractor of the Department or the Commission is exempt from the requirements for a license set forth in sections 62, 63, and 64 of the Act and from the regulations in this part to the extent that such prime contractor or subcontractor receives, possesses, uses, transfers or delivers source material under his prime contract or subcontract when the Commission determines that the exemption of the prime contractor or subcontractor is authorized by law; and that, under the terms of the contract or subcontract, there is adequate assurance that the work thereunder can be accomplished without undue risk to the public health and safety.

45 FR 65521

EXEMPTIONS

§ 40.11 Persons using source material under certain Department of Energy and Nuclear Regulatory Commission contracts.

Except to the extent that Department facilities or activities of the types subject to licensing pursuant to section 202 of the Energy Reorganization Act of 1974 or the Uranium Mill Tailings Radiation Control Act of 1978 are involved, any prime contractor of the Department is exempt from the requirements for a license set forth in sections 62, 63, and 64 of the Act and from the regulations in this part to the extent that such contractor, under his prime contract with the Department, receives, possesses, uses, transfers or delivers source material for: (a) The performance of work for the Department at a United States Government-owned or controlled site, including the transportation of source material to or from such site and the performance of contract services during temporary interruptions of such transportation; (b) research in, or development, manufacture, storage, testing or transportation of, atomic weapons or components thereof; or (c) the use or operation of nuclear reactors or other nuclear devices in a United States Government-owned vehicle or vessel. In addition to the foregoing exemptions, and subject to the requirement

45 FR 65521

§ 40.12 Carriers.

50 FR 12221

≫(a) Except as specified in paragraph (b) of this section, common and contract carriers, freight forwarders, warehousemen, and the U.S. Postal Service are exempt from the regulations in this part and the requirements for a license set forth in section 62 of the Act to the extent that they transport or store source material in the regular course of the carriage for another or storage incident thereto.

(b) The exemption in paragraph (a) of this section does not apply to a person who possesses a transient shipment (as defined in § 40.4(r)), an import shipment, or an export shipment of natural uranium in an amount exceeding 500 kilograms, unless the shipment is in the form of ore or ore residue.

§ 40.13 Unimportant quantities of source material.

45 FR 65521

(a) Any person is exempt from the regulations in this part and from the requirements for a license set forth in section 62 of the Act to the extent that such person receives, possesses, uses, transfers or delivers source material in any chemical mixture, compound, solution, or alloy in which the source material is by weight less than one-twentieth of 1 percent (0.05 percent) of the mixture, compound, solution or alloy. The exemption contained in this paragraph does not include byproduct material as defined in this part.

29 FR 1401

(b) Any person is exempt from the regulations in this part and from the requirements for a license set forth in section 62 of the act to the extent that such person receives, possesses, uses, or transfers unrefined and unprocessed ore containing source material; provided, that, except as authorized in a specific license, such person shall not refine or process such ore.

(c) Any person is exempt from the regulation in this part and from the requirements for a license set forth in section 62 of the Act to the extent that such person receives, possesses, uses, or transfers:

42 FR 6579

(1) Any quantities of thorium contained in (i) incandescent gas mantles, (ii) vacuum tubes, (iii) welding rods, (iv) electric lamps for illuminating purposes: *Provided*, That each lamp does not contain more than 50 milligrams of thorium, (v) germicidal lamps, sunlamps, and lamps for outdoor or industrial lighting: *Provided*, That each lamp does not contain more than 2 grams of thorium, (vi) rare earth metals and compounds, mixtures, and products containing not more than 0.25 percent by weight thorium, uranium, or any combination of these, or (vii) personnel neutron dosimeters: *Provided*, That each dosimeter does not contain more than 50 milligrams of thorium.

48 FR 33697

(2) Source material contained in the following products: (i) Glazed ceramic tableware, provided that the glaze contains not more than 20 percent by weight source material: (ii) piezoelectric ceramic containing not more than 2 percent by weight source material;

49 FR 35611

(iii) glassware containing not more than 10 percent by weight source material; but not including commercially manufactured glass brick, pane glass, ceramic tile, or other glass or ceramic used in construction;

(iv) glass enamel or glass enamel frit containing not more than 10 percent by weight source material imported or ordered for importation into the United States, or initially distributed by manufacturers in the United States, before July 25, 1983.[1]

26 FR 284

(3) Photographic film, negatives, and prints containing uranium or thorium;

(4) Any finished product or part fabricated of, or containing tungsten or magnesium-thorium alloys, provided that the thorium content of the alloy does not exceed 4 percent by weight and that the exemption contained in this subparagraph shall not be deemed to authorize the chemical, physical or metallurgical treatment or processing of any such product or part; and

[1] On July 25, 1983, the exemption of glass enamel or glass enamel frit was suspended. The exemption was eliminated on September 11, 1984.

(5) Uranium contained in counterweights installed in aircraft, rockets, projectiles, and missiles, or stored or handled in connection with installation or removal of such counterweights: *Provided*, That:

(i) The counterweights are manufactured in accordance with a specific license issued by the Commission or the Atomic Energy Commission authorizing distribution by the licensee pursuant to this paragraph;

(ii) Each counterweight has been impressed with the following legend clearly legible through any plating or other covering: "Depleted Uranium";[2]

(iii) Each counterweight is durably and legibly labeled or marked with the identification of the manufacturer, and the statement: "Unauthorized Alterations Prohibited";[2] and

(iv) The exemption contained in this paragraph shall not be deemed to authorize the chemical, physical, or metallurgical treatment or processing of any such counterweights other than repair or restoration of any plating or other covering.

(6) Natural or depleted uranium metal used as shielding constituting part of any shipping container: *Provded*, That:

(i) The shipping container is conspicuously and legibly impressed with the legend "CAUTION—RADIOACTIVE SHIELDING—URANIUM."; and

(ii) The uranium metal is encased in mild steel or equally fire resistant metal of minimum wall thickness of one-eighth inch (3.2 mm).

(7) Thorium contained in finished optical lenses, provided that each lens does not contain more than 30 percent by weight of thorium; and that the exemption contained in this subparagraph shall not be deemed to authorize either:

(i) The shaping, grinding or polishing of such lens or manufacturing processes other than the assembly of such lens into optical systems and devices without any alteration of the lens; or

(ii) The receipt, possession, use, or transfer, of thorium contained in contact lenses, or in spectacles, or in eyepieces in binoculars or other optical instruments.

(8) Thorium contained in any finished aircraft engine part containing nickel-thoria alloy, *Provided*, That:

(i) The thorium is dispersed in the nickel-thoria alloy in the form of finely divided thoria (thorium dioxide); and

(ii) The thorium content in the nickel-thoria alloy does not exceed 4 percent by weight.

(9) The exemptions in this paragraph (c) do not authorize the manufacture of any of the products described.

(d) Any person is exempt from the regulations in this part and from the requirements for a license set forth in section 62 of the Act to the extent that such person receives, possesses, uses, or transfers uranium contained in detector heads for use in fire detection units, provided that each detector head contains not more than 0.005 microcurie of uranium. The exemption in this paragraph does not authorize the manufacture of any detector head containing uranium.

§ 40.14 Specific exemptions.

(a) The Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulation in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

(b) [Reserved]

(c) The DOE is exempt from the requirements of this part to the extent that its activities are subject to the requirements of Part 60 of this chapter.

(d) Except as specifically provided in Part 61 of this chapter any licensee is exempt from the requirements of this part to the extent that its activities are subject to the requirements of Part 61 of this chapter.

[2] The requirements specified in paragraphs (c)(5) (ii) and (iii) of this section need not be met by counterweights manufactured prior to Dec. 31, 1969: *Provided*, That such counterweights were manufactured under a specific license issued by the Atomic Energy Commission and were impressed with the legend required by § 40.13(c)(5)(ii) in effect on June 30, 1969.

General Licenses

§ 40.20 Types of licenses.

Licenses for source material are of two types: general and specific. The general licenses provided in this part are effective without the filing of applications with the Commission or the issuance of licensing documents to particular persons. Specific licenses are issued to named persons upon applications filed pursuant to the regulations in this part.

§ 40.21 General license to receive title to source or byproduct material.

A general license is hereby issued authorizing the receipt of title to source or byproduct material, as defined in this Part, without regard to quantity. This general license does not authorize any person to receive, possess, deliver, use, or transfer source or byproduct material

§ 40.22 Small quantities of source material.

(a) A general license is hereby issued authorizing commercial and industrial firms, research, educational and medical institutions and Federal, State and local government agencies to use and transfer not more than fifteen (15) pounds of source material at any one time for research, development, educational, commercial or operational purposes. A person authorized to use or transfer source material, pursuant to this general license, may not receive more than a total of 150 pounds of source material in any one calendar year.

(b) Persons who receive, possess, use, or transfer source material pursuant to the general license issued in paragraph (a) of this section are exempt from the provisions of Parts 19, 20, and 21 of this chapter to the extent that such receipt, possession, use or transfer are within the terms of such general license: *Provided, however*, That this exemption shall not be deemed to apply to any such person who is also in possession of source material under a specific license issued pursuant to this part.

(c) Persons who receive, possess, use or transfer source material pursuant to the general license in paragraph (a) of this section are prohibited from administering source material, or the radiation therefrom, either externally or internally, to human beings except as may be authorized by NRC in a specific license.

§ 40.23 General license for carriers of transient shipments of natural uranium other than in the form of ore or ore residue.

(a) A general license is hereby issued to any person to possess a transient shipment of natural uranium, other than in the form of ore or ore residue, in amounts exceeding 500 kilograms.

(b)(1) Persons generally licensed under paragraph (a) of this section, who plan to carry a transient shipment with scheduled stops at a United States port, shall notify the Material Transfer Safeguards Licensing Branch, U.S. Nuclear Regulatory Commission, Washington, DC 20555. The notification must be in writing and must be received at least 10 days before transport of the shipment commences at the shipping facility.

(2) The notification must include the following information:

(i) Location of all scheduled stops in United States territory;

(ii) Arrival and departure times for all scheduled stops in United States territory;

(iii) The type of transport vehicle;

(iv) A physical description of the shipment;

(v) The numbers and types of containers;

(vi) The name and telephone number of the carrier's representative at each stopover location in United States territory;

(vii) A listing of the modes of shipments, transfer points, and routes to be used;

(viii) The estimated date and time that shipment will commence and that each nation (other than the United States) along the route is scheduled to be entered;

(ix) For shipments between countries that are not party to the Convention on the Physical Protection of Nuclear Material (i.e., not listed in Appendix F to Part 73 of this chapter), a certification that arrangements have been made to notify the Material Transfer Safeguards Licensing Branch when the shipment is received at the destination facility.

(c) Persons generally licensed under this section making unscheduled stops at United States ports, immediately after the decision to make an unscheduled stop, shall provide to the Material Transfer Safeguards Licensing Branch the information required under paragraph (b) of this section.

(d) A licensee who needs to amend a notification may do so by telephoning the Material Transfer Safeguards Licensing Branch at 301–427–4186.

50 FR 12221

§ 40.24 [Deleted 43 FR 6915.]

§ 40.25 General license for use of certain industrial products or devices.

41 FR 53330

(a) A general license is hereby issued to receive, acquire, possess, use, or transfer, in accordance with the provisions of paragraphs (b), (c), (d), and (e) of this section, depleted uranium contained in industrial products or devices for the purpose of providing a concentrated mass in a small volume of the product or device.

43 FR 6915

(b) The general license in paragraph (a) of this section applies only to industrial products or devices which have been manufactured or initially transferred in accordance with a specific license issued pursuant to § 40.34(a) or in accordance with a specific license issued by an Agreement State which authorizes manufacture of the products or devices for distribution to persons generally licensed by the Agreement State.

41 FR 53330

(c)(1) Persons who receive, acquire, possess, or use depleted uranium pursuant to the general license established by paragraph (a) of this section shall file Form NRC 244, "Registration Certificate—Use of Depleted Uranium Under General License," with the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. The form shall be submitted within 30 days after the first receipt or acquisition of such depleted uranium. The registrant shall furnish on Form NRC 244 the following information and such other information as may be required by that form:

(i) Name and address of the registrant;

(ii) A statement that the registrant has developed and will maintain procedures designed to establish physical control over the depleted uranium described in paragraph (a) of this section and designed to prevent transfer of such depleted uranium in any form, including metal scrap, to persons not authorized to receive the depleted uranium; and

(iii) Name and/or title, address, and telephone number of the individual duly authorized to act for and on behalf of the registrant in supervising the procedures identified in paragraph (c)(1)(ii) of this section.

(2) The registrant possessing or using depleted uranium under the general license established by paragraph (a) of this section shall report in writing to the Director of Inspection and Enforcement, any changes in information furnished by him in the Form NRC 244 "Registration Certificate—Use of Depleted Uranium Under General License." The report shall be submitted within 30 days after the effective date of such change.

(d) A person who receives, acquires, possesses, or uses depleted uranium pursuant to the general license established by paragraph (a) of this section:

41 FR 53330

(1) Shall not introduce such depleted uranium, in any form, into a chemical, physical, or metallurgical treatment or process, except a treatment or process for repair or restoration of any plating or other covering of the depleted uranium.

(2) Shall not abandon such depleted uranium.

(3) Shall transfer or dispose of such depleted uranium only by transfer in accordance with the provisions of § 40.51. In the case where the transferee receives the depleted uranium pursuant to the general license established by paragraph (a) of this section, the transferor shall furnish the transferee a copy of this section and a copy of Form NRC 244. In the case where the transferee receives the depleted uranium pursuant to a general license contained in an Agreement State's regulation equivalent to this section, the transferor shall furnish the transferee a copy of this section and a copy of Form NRC 244 accompanied by a note explaining that use of the product or device is regulated by the Agreement State under requirements substantially the same as those in this section.

(4) Within 30 days of any transfer, shall report in writing to the Director of Inspection and Enforcement the name and address of the person receiving the source material pursuant to such transfer.

(5) [Deleted 43 FR 6915.]

42 FR 2859

(e) Any person receiving, acquiring, possessing, using, or transferring depleted uranium pursuant to the general license established by paragraph (a) of this section is exempt from the requirements of Parts 19, 20, and 21 of this chapter with respect to the depleted uranium covered by that general license.

§ 40.26 General license for possession and storage of byproduct material as defined in this Part.

44 FR 50082

(a) A general license is hereby issued to receive title to, own, or possess byproduct material as defined in this Part without regard to form or quantity.

(b) The general license in paragraph (a) of this section applies only:

In the case of licensees of the Commission, where activities that result in the production of byproduct material are authorized under a specific license issued by the Commission pursuant to this Part, to byproduct material possessed or stored at an authorized disposal containment area or transported incident to such authorized activity; Provided, that authority to receive title to, own, or possess byproduct material under this general license shall terminate when the specific license for source material expires, is renewed, or is amended to include a specific license for byproduct material as defined in this Part.

(c) The general license in paragraph (a) of this section is subject to:

(1) The provisions of Parts 19, 20, 21, and §§ 40.1, 40.2, 40.2a, 40.3, 40.4, 40.5, 40.6, 40.41, 40.46, 40.61, 40.62, 40.63, 40.65, 40.71, and 40.81 of Part 40 of this Chapter; and

44 FR 50082

(2) The documentation of daily inspections of tailings or waste retention systems and the immediate notification of the appropriate NRC regional office as indicated in Appendix D of 10 CFR Part 20, or the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, of any failure in a tailings or waste retention system which results in a release of tailings or waste into unrestricted areas, and/or of any unusual conditions (conditions not contemplated in the design of the retention system) which if not corrected could lead to failure of the system and result in a release of tailings or waste into unrestricted areas; and any additional requirements the Commission may by order deem necessary.

45 FR 65521

(d) The general license in paragraph (a) of this section shall expire nine months from the effective date of this subparagraph unless an applicable licensee has submitted, pursuant to the provisions of § 40.31 of this Part, an application for license renewal or amendment which includes a detailed program for meeting the technical and financial criteria contained in Appendix A of this Part.

§ 40.27 [Removed] 47 FR 7205

49 FR 27923

40.31 Applications for specific licenses.

(a) A person may file an application for specific license in duplicate on NRC Form 313, "Application for Material License," in accordance with the instructions in § 40.5 of this chapter. Information contained in previous applications, statements or reports filed with the Commission may be incorporated by reference provided that the reference is clear and specific.

(b) The Commission may at any time after the filing of the original application, and before the expiration of the license, require further statements in order to enable the Commission to determine whether the application should be granted or denied or whether a license should be modified or revoked. All applications and statements shall be signed by the applicant or licensee or a person duly authorized to act for and on his behalf. [38 FR 284]

(c) Applications and documents submitted to the Commission in connection with applications will be made available for public inspection in accordance with the provisions of the regulations contained in Parts 2 and 9 of this chapter.

(d) An application for a license filed pursuant to the regulations in this part will be considered also as an application for licenses authorizing other activities for which licenses are required by the Act: *Provided*, That the application specifies the additional activities for which licenses are requested and complies with regulations of the Commission as to applications for such licenses.

(e) Each application for a source material license, other than a license exempted from Part 170 of this chapter, shall be accompanied by the fee prescribed in § 170.31 of this chapter. No fee will be required to accompany an application for renewal or amendment of a license, except as provided in § 170.31 of this chapter. [38 FR 145]

(f) An application for a license to possess and use source material for uranium milling, production of uranium hexafluoride, or for the conduct of any other activity which the Commission has determined pursuant to Subpart A of Part 51 of this chapter will significantly affect the quality of the environment shall be filed at least 9 months prior to commencement of construction of the plant or facility in which the activity will be conducted and shall be accompanied by any Environmental Report required pursuant to Subpart A of Part 51 of this chapter. [49 FR 9352]

(g) In response to a written request by the Commission, an applicant for a license to possess and use source material in a uranium hexafluoride production plant or a fuel fabrication plant and any other applicant for a license to possess and use more than one effective kilogram of source material (except for ore processing, as defined in § 75.4(o) of this chapter) shall file with the Commission the installation information described in §75.11 of this chapter, on Form N–71. The applicant shall also permit verification of this installation information by the International Atomic Energy Agency and take other action as may be necessary to implement the US/IAEA Safeguards Agreement, in the manner set forth § 75.6 and §§ 75.11 through 75.14 of this chapter. [49 FR 21699]

(h) An application for a license to receive, possess, and use source material for uranium or thorium milling or byproduct material, as defined in this Part, at sites formerly associated with such milling shall contain proposed written specifications relating to milling operations and the disposition of the byproduct material to achieve the requirements and objectives set forth in Appendix A of this Part. Each application must clearly demonstrate how the requirements and objectives set forth in Appendix A of this Part have been addressed. Failure to clearly demonstrate how the requirements and objectives in Appendix A have been addressed shall be grounds for refusing to accept an application. [46 FR 13497]

§ 40.32 General requirements for issuance of specific licenses. [41 FR 53330]

An application for a specific license will be approved if: [43 FR 6915]

(a) The application is for a purpose authorized by the Act; and [38 FR 12731]

(b) The applicant is qualified by reason of training and experience to use the source material for the purpose requested in such manner as to protect health and minimize danger to life or property; and

(c) The applicant's proposed equipment, facilities and procedures are adequate to protect health and minimize danger to life or property; and

(d) The issuance of the license will not be inimical to the common defense and security or to the health and safety of the public; and

(e) In the case of an application for a license to possess and use source and byproduct material for uranium milling, production of uranium hexafluoride, or for the conduct of any other activity which the Commission determines will significantly affect the quality of the environment, the Director of Nuclear Material Safety and Safeguards or his designee, before commencement of construction of the plant or facility in which the activity will be conducted, on the basis of information filed and evaluations made pursuant to Subpart A of Part 51 of this chapter, has concluded, after weighing the environmental, economic, technical and other benefits against environmental costs and considering available alternatives, that the action called for is the issuance of the proposed license, with any appropriate conditions to protect environmental values. Commencement of construction prior to such a conclusion shall be grounds for denial of a license to possess and use source and byproduct material in such plant or facility. As used in this paragraph the term "commencement of construction" means any clearing of land, excavation, or other substantial action that would adversely affect the environment of a site. The term does not mean site exploration, necessary roads for site exploration, borings to determine foundation conditions, or other preconstruction monitoring or testing to establish background information related to the suitability of the site or the protection of environmental values. [49 FR 9352]

(f) The applicant satisfies any applicable special requirements contained in § 40.34. [41 FR 53330]

§ 40.33 [Deleted 43 FR 6915.]

§ 40.34 Special requirements for issuance of specific licenses.

(a) An application for a specific license to manufacture industrial products and devices containing depleted uranium, or to initially transfer such products or devices, for use pursuant to § 40.25 or equivalent regulations of an Agreement State, will be approved if:

(1) The applicant satisfies the general requirements specified in § 40.32;

(2) The applicant submits sufficient information relating to the design, manufacture, prototype testing, quality control procedures, labeling or marking, proposed uses, and potential hazards of the industrial product or device to provide reasonable assurance that possession, use, or transfer of the depleted uranium in the product or device is not likely to cause any individual to receive in any period of one calendar quarter a radiation dose in excess of 10 percent of the limits specified in § 20.101(a) of this chapter; and

(3) The applicant submits sufficient information regarding the industrial product or device and the presence of depleted uranium for a mass-volume application in the product or device to provide reasonable assurance that unique benefits will accrue to the public because of the usefulness of the product or device. [43 FR 6915]

(b) In the case of an industrial product or device whose unique benefits are questionable, the Commission will approve an application for a specific license under this paragraph only if the product or device is found to combine a high degree of utility and low probability of uncontrolled disposal and dispersal of significant quantities of depleted uranium into the environment.

(c) The Commission may deny an application for a specific license under this paragraph if the end uses of the industrial product or device cannot be reasonably foreseen.

§ 40.35 Conditions of specific licenses issued pursuant to § 40.34.

Each person licensed pursuant to § 40.34 shall:

(a) Maintain the level of quality control required by the license in the manufacture of the industrial product or device, and in the installation of the depleted uranium into the product or device;

(b) Label or mark each unit to: (1) Identify the manufacturer or initial transferor of the product or device and the number of the license under which the product or device was manufactured or initially transferred the fact that the product or device contains depleted uranium, and the quantity of depleted uranium in each product or device; and (2) State that the receipt, possession, use, and transfer of the product or device are subject to a general license or the equivalent and the regulations of the U.S. NRC or of an Agreement State;

(c) Assure that the depleted uranium before being installed in each product or device has been impressed with the following legend clearly legible through any plating or other covering: "Depleted Uranium";

(d)(1) Furnish a copy of the general license contained in § 40.25 and a copy of Form NRC 244 to each person to whom he transfers source material in a product or device for use pursuant to the general license contained in § 40.25; or

(2) Furnish a copy of the general license contained in the Agreement State's regulation equivalent to § 40.25 and a copy of the Agreement State's certificate, or alternately, furnish a copy of the general license contained in § 40.25 and a copy of Form NRC 244 to each person to whom he transfers source material in a product or device for use pursuant to the general license of an Agreement State. If a copy of the general license in § 40.25 and a copy of Form NRC 244 are furnished to such person, they shall be accompanied by a note explaining that use of the product or device is regulated by the Agreement State under requirements substantially the same as those in § 40.25; and [43 FR 6915]

(e)(1) Report to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, all transfers of industrial products or devices to persons for use under the general license in § 40.25. Such report shall identify each general licensee by name and address, an individual by name and/or position who may constitute a point of contact between the Commission and the general licensee, the type and model number of device transferred, and the quantity of depleted uranium contained in the product or device. The report shall be submitted within 30 days after the end of each calendar quarter in which such a product or device is transferred to the generally licensed person. If no transfers have been made to persons generally licensed under § 40.25 during the reporting period, the report shall so indicate;

(2) Report to the responsible Agreement State Agency all transfers of industrial products or devices to persons for use under the general license in the Agreement State's regulation equivalent to § 40.25. Such report shall identify each general licensee by name and address, an individual by name and/or position who may constitute a point of contact between the Agency and the general licensee, the type and model number of device transferred, and the quantity of depleted uranium contained in the product or device. The report shall be submitted within 30 days after the end of each calendar quarter in which such product or device is transferred to the generally licensed person. If no transfers have been made to a particular Agreement State during the reporting period, this information shall be reported to the responsible Agreement State Agency;

(3) Keep records showing the name, address, and a point of contact for each general licensee to whom he transfers depleted uranium in industrial products or devices for use pursuant to the general license provided in § 40.25 or equivalent regulations of an Agreement State. The records shall be maintained for a period of two years and shall show the date of each transfer, the quantity of depleted uranium in each product or device transferred, and compliance with the report requirements of this section. [43 FR 6915]

LICENSES

§ 40.41 Terms and conditions of licenses.

(a) Each license issued pursuant to the regulations in this part shall be subject to all the provisions of the act, now or hereafter in effect, and to all rules, regulations and orders of the Commission. [26 FR 284]

(b) Neither the license nor any right under the license shall be assigned or otherwise transferred in violation of the provisions of the Act.

(c) Each person licensed by the Commission pursuant to the regulations in this part shall confine his possession and use of source or byproduct material to the locations and purposes authorized in the license. Except as otherwise provided in the license, a license issued pursuant to the regulations in this part shall carry with it the right to receive, possess, and use source or byproduct material. Preparation for shipment and transport of source or byproduct material shall be in accordance with the provisions of Part 71 of this chapter. [45 FR 65521]

(d) Each license issued pursuant to the regulations in this part shall be deemed to contain the provisions set forth in sections 183b.-d., of the Act, whether or not said provisions are expressly set forth in the license. [31 FR 15145]

(e) The Commission may incorporate in any license at the time of issuance, or thereafter, by appropriate rule, regulation or order, such additional requirements and conditions with respect to the licensee's receipt, possession, use, and transfer of source or byproduct material as it deems appropriate or necessary in order to: [45 FR 65521]

(1) Promote the common defense and security;

(2) Protect health or to minimize danger of life or property;

(3) Protect restricted data;

(4) Require such reports and the keeping of such records, and to provide for such inspections of activities under the license as may be necessary or appropriate to effectuate the purposes of the act and regulations thereunder.

(f) (Deleted 48 FR 32324)

§ 40.42 Expiration and termination of licenses.

(a) Except as provided in § 40.43(b) and paragraph (d)(3) of this section, each specific license expires at the end of the day, in the month and year stated in the license.

(b) Each licensee shall notify the Commission immediately, in writting under § 40.5, and request termination of the license when the licensee decides to terminate all activities involving materials authorized under the license. This notification and request for termination of the license must include the reports and information specified in paragraphs (d)(1)(iv) and (v) of this section. The licensee is subject to the provisions of paragraphs (d) and (e) of this section, as applicable.

(c) No less than 30 days before the expiration date specified in a specific license the licensee shall either—

(1) Submit an application for license renewal under § 40.43; or

(2) Notify the Commission, in writing under § 40.5, if the licensee decides not to renew the license.

(d)(1) If a licensee does not submit an application for license renewal under § 40.43, the licensee shall, on or before the expiration date specified in the license—

(i) Terminate use of source material;

(ii) Remove radioactive contamination to the extent practicable;

(iii) Properly dispose of source material;

(iv) Submit a completed form NRC–314; and

(v) Submit a radiation survey report to confirm the absence of radioactive materials or to establish the levels of residual radioactive contamination, unless the licensee demonstrates the absence of residual radioactive contamination in some other manner. The licensee shall, as appropriate—

(A) Report levels of radiation in units of microrads per hour of beta and gamma radiation at one centimeter and gamma radiation at one meter from surfaces and report levels of radioactivity in units of disintegrations per minute (or microcuries) per 100 square centimeters removable and fixed on surfaces, microcuries per milliliter in water, and picocuries per gram in contaiminated solids such as soils or concrete; and

(B) Specify the survey instrument(s) used and certify that each instrument is properly calibrated and tested.

(2) If no residual radioactive contamination attributable to activities conducted under the license is detected, the licensee shall submit a certification that no detectable radioactive contamination was found. If the information submitted under this paragraph and paragraphs (d)(1) (iv) and (v) of this section is adequate, the Commission will notify the licensee in writing that the license is terminated.

(3)(i) If detectable levels of residual radioactive contamination attributable to activities conducted under a license are found, the license continues in effect beyond the expiration date, if necessary, with respect to possession of residual source material present as contamination until the Commission notifies the licensee in writing that the license is terminated. During this time the licensee is subject to the provisions of paragraph (e) of this section.

(ii) In addition to the information submitted under paragraphs (d)(1) (iv) and (v) of this section the licensee shall submit a plan for decontamination, if required, as regards residual radioactive contamination remaining at the time the license expires.

(e) Each licensee who possesses residual source material under paragraph (d)(3) of this section, following the expiration date specified in the license, shall—

(1) Limit actions involving source material to those related to decontamination and other activities related to preparation for release for unrestricted use; and

(2) Continue to control entry to restricted areas until they are suitable for release for unrestricted use and the Commission notifies the licensee in writing that the license is terminated.

48 FR 32324

§ 40.43 Renewal of licenses.

(a) Applications for renewal of a specific license shall be filed on Form NRC–2 in accordance with §40.31 of this part.

49FR19623

(b) In any case in which a licensee, not less than thirty (30) days prior to expiration of his existing license, has filed an application in proper form for renewal or for a new license, such existing license shall not expire until the application for renewal or for a new license has been finally determined by the Commission.

25 FR 8619

§ 40.44 Amendment of licenses at request of licensee.

Applications for amendment of a license shall be filed on Form NRC–2 in accordance with § 40.31 and shall specify the respects in which the licensee desires the license to be amended and the grounds for such amendment.

49 FR 19623

§ 40.45 Commission action on applications to renew or amend.

In considering an application by a licensee to renew or amend his license the Commission will apply the applicable criteria set forth in § 40.32.

43 FR 6915

§ 40.46 Inalienability of licenses.

No license issued or granted pursuant to the regulations in this part shall be transferred, assigned or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of any license to any person, unless the Commission shall after securing full information, find that the transfer is in accordance with the provisions of this act, and shall give its consent in writing.

25 FR 8619

§ 40.47 (Deleted 40 FR 8774)

§ 40.51 Transfer of source or byproduct material.

(a) No licensee shall transfer source or byproduct material except as authorized pursuant to this section.

(b) Except as otherwise provided in his license and subject to the provisions of paragraphs (c) and (d) of this section, any licensee may transfer source or byproduct material:

(1) To the Department of Energy

(2) To the agency in any Agreement State which regulates radioactive materials pursuant to an agreement with the Commission or the Atomic Energy Commission under section 274 of the Act;

(3) To any person exempt from the licensing requirements of the Act and regulations in this part, to the extent permitted under such exemption;

(4) To any person in an Agreement State subject to the jurisdiction of that State who has been exempted from the licensing requirements and regulations of that State, to the extent permitted under such exemptions;

(5) To any person authorized to receive such source or byproduct material under terms of a specific license or a general license or their equivalents issued by the Commission or an Agreement State;

(6) To any person abroad pursuant to an export license issued under Part 110 of this chapter; or

(7) As otherwise authorized by the commission in writing.

(c) Before transferring source or byproduct material to a specific licensee of the Commission or an Agreement State or to a general licensee who is required to register with the Commission or with an Agreement State prior to receipt of the source or byproduct material, the licensee transferring the material shall verify that the transferee's license authorizes receipt of the type, form, and quantity of source or byproduct material to be transferred.

(d) The following methods for the verification required by paragraph (c) of this section are acceptable:

(1) The transferor may have in his possession, and read, a current copy of the transferee's specific license or registration certificate;

45 FR 65521

(2) The transferor may have in his possession a written certification by the transferee that he is authorized by license or registration certificate to receive the type, form, and quantity of source or byproduct material to be transferred, specifying the license or registration certification number, issuing agency and expiration date;

(3) For emergency shipments the transferor my accept oral certification by the transferee that he is authorized by license or registration certificate to receive the type, form, and quantity of source or byproduct material to be transferred, specifying the license or registration certificate number, issuing agency and expiration date: *Provided*, That the oral certification is confirmed in writing within 10 days;

(4) The transferor may obtain other sources of information compiled by a reporting service from official records of the Commission or the licensing agency of an Agreement State as to the identity of licensees and the scope and expiration dates of licenses and registrations; or

(5) When none of the methods of verification described in paragraphs (d)(1) to (4) of this section are readily available or when a transferor desires to verify that information received by one of such methods is correct or up-to-date, the transferor may obtain and record confirmation from the Commission or the licensing agency of an Agreement State that the transferee is licensed to receive the source or byproduct material.

45 FR 65521

RECORDS, REPORTS, AND INSPECTIONS

§ 40.61 Records.

(a) Each person who receives source or byproduct material pursuant to a license issued pursuant to the regulations in this part shall keep records showing the receipt, transfer, and disposal of such source or byproduct material.

(b) Records which are required by the regulations in this part or by license condition shall be maintained for the period specified by the appropriate regulation or license condition. If a retention period is not otherwise specified by regulation or license condition, such records shall be maintained until the Commission authorizes their disposition.

(c)(1) Records of receipt of source or byproduct material which must be maintained pursuant to paragraph (a) of this section shall be maintained as long as the licensee retains possession of the source or byproduct material and for five years following transfer, or disposition of the source of byproduct material.

(2) [Reserved]

(3) Records of transfer of source or byproduct material shall be maintained by the licensee who transferred the material until the Commission authorizes their disposition.

(4) Records of disposal of source or byproduct material shall be maintained in accordance with § 20.401(c) of this chapter.

(5) If source or byproduct material is combined or mixed with other licensed material and subsequently treated in a manner which makes direct correlation of a receipt record with a transfer, export, or disposition record impossible, evaluative techniques such as first-in-first-out may be used for purposes of the records retention requirements of this paragraph.

45 FR 65521

(d)(1) Records which must be maintained pursuant to this part may be the original or reproduced copy or microform if such reproduced copy or microform is duly authenticated by authorized personnel and the microform is capable of producing a clear and legible copy after storage for the period specified by Commission regulations.

(2) If there is a conflict between the Commission's regulations in this part, license condition, or other written Commission approval or authorization pertaining to the retention period for the same type of record, the retention period specified in the regulations in this part for such records shall apply unless the Commission, pursuant to § 40.14 of this part, has granted a specific exemption from the record retention requirements specified in the regulations in this part.

45 FR 65521

§ 40.62 Inspections.

(a) Each licensee shall afford to the Commission at all reasonable times opportunity to inspect source or byproduct material and the premises and facilities wherein source or byproduct material is used or stored.

(b) Each licensee shall make available to the Commission for inspection, upon reasonable notice, records kept by him pursuant to the regulations in this chapter.

§ 40.63 Tests.

Each licensee shall perform, or permit the Commission to perform, such tests as the Commission deems appropriate or necessary for the administration of the regulations in this part, including tests of:

(a) Source or byproduct material;

(b) Facilities wherein source or byproduct material is utilized or stored;

(c) Radiation detection and monitoring instruments; and

(d) Other equipment and devices used in connection with the utilization and storage of source or byproduct material.

49FR24705

§ 40.64 Reports.

(a) Except as specified in paragraphs (d) and (e) of this section, each specific licensee who transfers, receives, or adjusts the inventory in any manner by 1 kilogram or more of uranium or thorium of foreign origin or who imports or exports 1 kilogram or more of uranium or thorium of any origin shall complete and distribute a Nuclear Material Transaction Report of Form DOE/NRC 741 in accordance with the printed instructions (NUREG/BR–0006) for completing the form. Copies of the form and instructions may be obtained by writing to U.S. Nuclear Regulatory Commission, Division of Safeguards, Washington, DC 20555. Each licensee who transfers the material shall submit a completed copy of Form DOE/NRC 741 to the Commission and three copies to the receiver of the material no later than the close of business the next working day. Each licensee who receives the material shall submit a completed copy of Form DOE/NRC 741 to the Commission and to the shipper of the material within ten (10) days after the material is received. The Commission's copies of the reports must be submitted to the address specified in the printed instructions.

49 FR 24705

(b) Except as specified in paragraphs (d) and (e) of this section, each licensee who is authorized to possess at any one time and location more than 1,000 kilograms of uranium or thorium or any combination of uranium or thorium shall submit to the Commission within 30 days after September 30 of each year a statement of the licensee's source material inventory. The reports must be submitted to the address specified in the reporting instructions (NUREG/BR–0007), and include the Reporting Identification Symbol (RIS) assigned by the Commission to the licensee. Copies of the reporting instructions may be obtained by writing U.S. Nuclear Regulatory Commission, Division of Safeguards, Washington, DC 20555.

41 FR 16445

(c) Except as specified in paragraph (d) of this section, each licensee who is authorized to possess uranium or thorium pursuant to a specific license shall report promptly to the appropriate NRC Regional Office listed in Appendix D of Part 20 of this chapter by telephone and telegraph, mailgram, or facsimile any incident in which an attempt has been made or is believed to have been made to commit a theft or unlawful diversion of more than 15 pounds of such material at any one time or more than 150 pounds of such material in any one calendar year. The initial report shall be followed within a period of fifteen (15) days by a written report submitted to the appropriate NRC Regional Office which sets forth the details of the incident and its consequences. A copy of such written report shall be sent to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

36 FR 10938

Subsequent to the submission of the written report required by this paragraph, the licensee shall promptly inform the Director of Inspection and Enforcement by means of a written report of any substantive additional information, which becomes available to the licensee, concerning an attempted or apparent theft or unlawful diversion of source material.

49 FR 24705

(d) The reports described in paragraphs (a), (b), and (c) of this section are not required for—

(1) Processed ores containing less than five (5) percent of uranium or thorium, or any combination of uranium or thorium, by dry weight;

(2) Thorium contained in magnesium-thorium and tungsten-thorium alloys, if the thorium content in the alloys does not exceed 4 percent by weight;

(3) Chemical catalysts containing uranium depleted in the U-235 isotope to 0.4 percent or less, if the uranium content of the catalyst does not exceed 15 percent by weight; or

(4) Any source material contained in non-nuclear end use devices or components, including but not limited to permanently installed shielding, teletherapy, radiography, X-ray, accelerator devices, or munitions.

45 FR 50705

(e) Any licensee who is required to submit inventory change reports and material status reports pursuant to Part 75 of this chapter (pertaining to implementation of the US/IAEA Safeguards Agreement) shall prepare and submit such reports only as provided in §§ 75.34 and 75.35 of this chapter (instead of as provided in paragraphs (a) and (b) of this section).

40 FR 53230

§ 40.65 Effluent monitoring reporting requirements.

(a) Each licensee authorized to possess and use source material in uranium milling or production of uranium hexafluoride, shall:

(1) Submit a report to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter, with copies to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, within 60 days after January 1, 1976 and July 1, 1976, and within 60 days after January 1 and July 1 of each year thereafter, specifying the quantity of each of the principal radionuclides released to unrestricted areas in liquid and in gaseous effluents during the previous six months of operation, and such other information the Commission may require to estimate maximum potential annual radiation doses to the public resulting from effluent releases. If quantities of radioactive materials released during the reporting period are significantly above the licensee's design objectives previously reviewed as part of the licensing action, the

report shall cover this specifically. On the basis of such reports and any additional information the Commission may obtain from the licensee or others, the Commission may from time to time require the licensee to take such action as the Commission deems appropriate. [40 FR 53230]

§ 40.66 Requirement for advance notice of export shipments of natural uranium.

(a) Each licensee authorized to export natural uranium, other than in the form of ore or ore residue, in amounts exceeding 500 kilograms, shall notify the Material Transfer Safeguards Licensing Branch, U.S. Nuclear Regulatory Commission, Washington, DC 20555. The notification must be in writing and must be received at least 10 days before transport of the shipment commences at the shipping facility.

(b) The notification must include the following information:

(1) The name(s), address(es), and telephone number(s) of the shipper, receiver, and carrier(s);

(2) A physical description of the shipment;

(3) A listing of the mode(s) of shipment, transfer points, and routes to be used;

(4) The estimated date and time that shipment will commence and that each nation (other than the United States) along the route is scheduled to be entered; and

(5) A certification that arrangements have been made to notify the Material Transfer Safeguards Licensing Branch when the shipment is received at the receiving facility.

(c) A licensee who needs to amend a notification may do so by telephoning the Material Transfer Safeguards Licensing Branch at 301–427–4186. [50 FR 12221]

§ 40.67 Requirement for advance notice for importation of natural uranium from countries that are not party to the Convention on the Physical Protection of Nuclear Material.

(a) Each licensee authorized to import natural uranium, other than in the form of ore or ore residue, in amounts exceeding 500 kilograms, from countries not party to the Convention on the Physical Protection of Nuclear Material (see Appendix F of Part 73 of this chapter) shall notify the Material Transfer Safeguards Licensing Branch, U.S. Nuclear Regulatory Commission, Washington, DC 20555. The notification must be in writing and must be received at least 10 days before transport of the shipment commences at the shipping facility.

(b) The notification must include the following information:

(1) The name(s), address(es), and telephone number(s) of the shipper, receiver and carrier(s);

(2) A physical description of the shipment;

(3) A listing of the mode(s) of shipment, transfer points, and routes to be used;

(4) The estimated date and time that shipment will commence and that each nation along the route is scheduled to be entered; [50 FR 12221]

(c) The licensee shall notify the Material Transfer Safeguards Licensing Branch by telephone at 301–427–4186 when the shipment is received at the receiving facility;

(d) A licensee who needs to amend a notification may do so by telephoning the Material Transfer Safeguards Licensing Branch at 301–427–4186.

Modification and Revocation of Licenses [26 FR 284]

§ 40.71 Modification and revocation of licenses. [48 FR 32324]

(a) The terms and conditions of each license shall be subject to amendment, revision, or modification by reason of amendments to the act, or by reason of rules, regulations, or orders issued in accordance with the act.

(b) Any license may be revoked, suspended, or modified, in whole or in part, for any material false statement in the application or any statement of fact required under section 182 of the Act, or because of conditions revealed by such application or statement of fact or any report, record, or inspection or other means which would warrant the Commission to refuse to grant a license on an original application, or for violation of, or failure to observe any of, the terms and conditions of the Act, or the license, or of any rule, regulation or order of the Commission. [26 FR 284]

(c) Except in cases of willfulness or those in which the public health, interest or safety requires otherwise, no license shall be modified, suspended, or revoked unless, prior to the institution of proceedings therefor, facts or conduct which may warrant such action shall have been called to the attention of the licensee in writing and the licensee shall have been accorded opportunity to demonstrate or achieve compliance with all lawful requirements. [26 FR 284]

Enforcement

§ 40.81 Violations. [40 FR 8774]

An injunction or other court order may be obtained prohibiting any violation of any provision of the Atomic Energy Act of 1954, as amended, or Title II of the Energy Reorganization Act of 1974, or any regulation or order issued thereunder. A court order may be obtained for the payment of a civil penalty imposed pursuant to section 234 of the Act for violation of section 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, or 109 of the Act, or section 206 of the Energy Reorganization Act of 1974, or any rule, regulation, or order issued thereunder, or any term, condition, or limitation of any license issued thereunder, or for any violation for which a license may be revoked under section 186 of the Act. Any person who willfully violates any provision of the Act or any regulation or order issued thereunder may be guilty of a crime and, upon conviction, may be punished by fine or imprisonment or both, as provided by law.

Appendix A to Part 40

Criteria Relating to the Operation of Uranium Mills and the Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material From Ores Processed Primarily for Their Source Material Content [45 FR 65521]

Introduction. Every applicant for a license to possess and use source material in conjunction with uranium or thorium milling, or byproduct material at sites formerly associated with such milling, is required by the provisions of § 40.31 (h) * to include in a license application proposed specifications relating to milling operations and the disposition of tailings or waste resulting from such milling activities. This appendix establishes technical, financial, ownership, and long term site surveillance criteria relating to the siting, operation, decontamination, decommissioning, and reclamation of mills and tailings or waste systems and sites at which such mills and systems are located. As used in this appendix, the term "as low as is reasonably achievable" has the same meaning as in paragraph 20.1(c) of 10 CFR 20 of this Chapter

In many cases, flexibility is provided in the criteria to allow achieving an optimum tailings disposal program on a site specific basis. However, in such cases the objectives, technical alternatives, and concerns which must be taken into account in developing a tailings program are identified. As provided by the provisions of § 40.31 (h) , applications for licenses must clearly demonstrate how the criteria have been addressed. [46 FR 13497]

(next page is 40-11a)

45 FR 65521

The specifications shall be developed considering the expected full capacity of tailings or waste systems and the lifetime of mill operations. Where later expansions of systems or operations may be likely (for example, where large quantities of ore now marginally uneconomical may be stockpiled), the amendability of the disposal system to accommodate increased capacities without degradation in long term stability and other performance factors shall be evaluated.

49 FR 19623

Detailed programs meeting the technical and financial criteria in the Appendix, including appropriate supporting data, analyses, and alternatives, shall be developed by existing uranium milling licensees and filed with the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, in connection with license renewal applications (Form NRC–2) or within nine months from the effective date of this Appendix, whichever occurs first.

45 FR 65521

I. Technical Criteria

Criterion 1—In selecting among alternative tailings disposal sites or judging the adequacy of existing tailings sites, the following site features, which will determine the extent to which a program meets the broad objective of isolating the tailings and associated contaminants from man and the environment during operations and for thousands of years thereafter without ongoing active maintenance, shall be considered:

- remoteness from populated areas;
- hydrologic and other natural conditions as they contribute to continued immobilization and isolation of contaminants from usable groundwater sources; and
- potential fo minimizing erosion, disturbance, and dispersion by natural forces over the long term.

The site selection process shall be an optimization to the maximum extent reasonably achievable in terms of these features.

In the selection of disposal sites, primary emphasis shall be given to isolation of tailings or wastes, a matter having long term impacts, as opposed to consideration only of short term convenience or benefits, such as minimization of transportation or land acquisition costs. While isolation of tailings will be a function of both site and engineering design, overriding consideration shall be given to siting features given the long term nature of the tailings hazards.

Tailings shall be disposed of in a manner that no active maintenance is required to preserve conditions of the site

Criterion 2—To avoid proliferation of small waste disposal sites and thereby reduce perpetual surveillance obligations, byproduct material from in situ extraction operations, such as residues from solution evaporation or contaminated control processes, and wastes from small remote above ground extraction operations shall be disposed of at existing large mill tailings disposal sites; unless, considering the nature of the wastes, such as their volume and specific activity, and the costs and environmental impacts of transporting the wastes to a large disposal site, such offsite disposal is demonstrated to be impracticable or the advantages of onsite burial clearly outweigh the benefits of reducing the perpetual surveillance obligations.

Criterion 3—The "prime option" for disposal of tailings is placement below grade.

either in mines or specially excavated pits (that is, where the need for any specially constructed retention structure is eliminated).

The evaluation of alternative sites and disposal methods performed by mill operators in support of their proposed tailings disposal program (provided in applicants' environmental reports) shall reflect serious consideration of this disposal mode. In some instances, below grade disposal may not be the most environmentally sound approach, such as might be the case if a high quality groundwater formation is relatively close to the surface or not very well isolated by overlying soils and rock. Also, geologic and topographic conditions might make full below grade burial impracticable; for example, bedrock may be sufficiently near the surface that blasting would be required to excavate a disposal pit at excessive cost, and more suitable alternate sites are not available. Where full below grade burial is not practicable, the size of retention structures, and size and steepness of slopes of associated exposed embankments, shall be minimized by excavation to the maximum extent reasonably achievable or appropriate given the geologic and hydrologic conditions at a site. In these cases, it must be demonstrated that an above grade disposal program will provide reasonably equivalent isolation of the tailings from natural erosional forces.

Criterion 4—The following site and design criteria shall be adhered to whether tailings or wastes are disposed of above or below grade:

(a) Upstream rainfall catchment areas must be minimized to decrease erosion potential and the size of the maximum possible flood which could erode or wash out sections of the tailings disposal area.

(b) Topographic features should provide good wind protection.

(c) Embankment and cover slopes shall be relatively flat after final stabilization to miminize erosion potential and to provide conservative factors of safety assuring long term stability. The broad objective should be to contour final slopes to grades which are as close as possible to those which would be provided if tailings were disposed of below grade; this could, for example, lead to slopes of about 10 horizontal to 1 vertical (10h:1v) or less steep. In general, slopes should not be steeper than about 5h:1v. Where steeper slopes are proposed, reasons why a slope less steep than 5h:1v would be impracticable should be provided, and compensating factors and conditions which make such slopes acceptable should be identified.

(d) A full self-sustaining vegetative cover shall be established or rock cover employed to reduce wind and water erosion to negligible levels.

Where a full vegetative cover is not likely to be self-sustaining due to climatic or other conditions, such as in semi-arid and arid regions, rock cover shall be employed on slopes of the impoundment system. The NRC will consider relaxing this requirement for extremely gentle slopes such as those which may exist on the top of the pile.

The following factors shall be considered in establishing the final rock cover design to avoid displacement of rock particles by human and animal traffic or by natural processes, and to preclude undercutting and piping:

• shape, size, composition, and gradation of rock particles (excepting bedding material average particles size shall be at least cobble size or greater);

• rock cover thickness and zoning of particles by size; and

• steepness of underlying slopes.

Individual rock fragments shall be dense, sound, and resistant to abrasion, and shall be free from cracks, seams, and other defects that would tend to unduly increase their destruction by water and frost actions. Weak, friable, or laminated aggregate shall not be used. Shale, rock laminated with shale, and cherts shall not be used.

Rock covering of slopes may not be required where top covers are very thick (on the order of 10m or greater); impoundment slopes are very gentle (on the order of 10 h:1v or less); bulk cover materials have inherently favorable erosion resistance characteristics; and, there is negligible drainage catchment area upstream of the pile and good wind protection as described in points (a) and (b) of this Criterion.

Furthermore, all impoundment surfaces shall be contoured to avoid areas of concentrated surface runoff or abrupt or sharp changes in slope gradient. In addition to rock cover on slopes, areas toward which surface runoff might be directed shall be well protected with substantial rock cover (rip rap). In addition to providing for stability of the impoundment system itself, overall stability, erosion potential, and geomorphology of surrounding terrain shall be evaluated to assure that there are not ongoing or potential processes, such as gully erosion, which would lead to impoundment instability.

(e) The impoundment shall not be located near a capable fault that could cause a maximum credible earthquake larger than that which the impoundment could reasonably be expected to withstand. As used in this criterion, the term "capable fault" has the same meaning as defined in § III(g) of Appendix A of 10 CFR 100. The term "maximum credible earthquake" means that earthquake which would cause the maximum vibratory ground motion based upon an evaluation of earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material.

(f) The impoundment, where feasible, should be designed to incorporate features which will promote deposition. For example, design features which promote deposition of sediment suspended in any runoff which flows into the impoundment area might be utilized; the object of such a design feature would be to enhance the thickness of cover over time.

Criterion 5—Steps shall be taken to reduce seepage of toxic materials into groundwater to the maximum extent reasonably achievable. Any seepage which does occur shall not result in deterioration of existing groundwater supplies from their current or potential uses. The following shall be considered in order to accomplish this objective:

• installation of low permeability bottom liners (Where synthetic liners are used, a leakage detection system shall be installed immediately below the liner to ensure major failures are detected if they occur. This is in addition to the groundwater monitoring program conducted as provided in Criterion 7. Where clay liners are proposed or relatively thin in-situ clay soils are to be relied upon for seepage control, tests shall be conducted with representative tailings solutions and clay materials to confirm that no significant deterioration of permeability or stability properties will occur with continuous exposure of clay to tailings solutions. Tests shall be run for a sufficient period of time to reveal any effects if they are going to occur (in some cases, deterioration has been observed to occur rather rapidly after about nine months of exposure)).

• mill process designs which provide the maximum practicable recycle of solutions and conservation of water to reduce the net input of liquid to the tailings impoundment.

• dewatering of tailings by process devices and/or in-situ drainage systems (At new sites, tailings shall be dewatered by a drainage system installed at the bottom of the impoundment to lower the phreatic surface and reduce the driving head for seepage, unless tests show tailings are not amenable to such a system. Where in-situ dewatering is to be conducted, the impoundment bottom shall be graded to assure that the drains are at a low point. The drains shall be protected by suitable filter materials to assure that drains remain free running. The drainage system shall also be adequately sized to assure good drainage.).

• neutralization to promote immobilization of toxic substances.

Where groundwater impacts are occurring at an existing site due to seepage, action shall be taken to alleviate conditions that lead to excessive seepage impacts and restore groundwater quality to its potential use before milling operations began to the maximum extent practicable. The specific seepage control and groundwater protection method, or combination of methods, to be used must be worked out on a site-specific basis. Technical specifications shall be prepared to control installation of seepage control systems. A quality assurance, testing, and inspection program, which includes supervision by a qualified engineer or scientist, shall be established to assure the specifications are met.

While the primary method of protecting groundwater shall be isolation of tailings and tailings solutions, disposal involving contact with groundwater will be considered provided supporting tests and analyses are presented demonstrating that the proposed disposal and treatment methods will not degrade groundwater from current or potential uses.

In support of a tailings disposal system proposal, the applicant/operator shall supply information concerning the following:

• The chemical and radioactive characteristics of the waste solutions.

• The characteristics of the underlying soil and geologic formations particularly as they will control transport of contaminants and solutions. This shall include detailed information concerning extent, thickness, uniformity, shape, and orientation of underlying strata. Hydraulic gradients and

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conductivities of the various formations shall be determined.

This information shall be gathered from borings and field survey methods taken within the proposed impoundment area and in surrounding areas where contaminants might migrate to usable groundwater. The information gathered on boreholes shall include both geologic and geophysical logs in sufficient number and degree of sophistication to allow determining significant discontinuities, fractures, and channeled deposits of high hydraulic conductivity. If field survey methods are used, they should be in addition to and calibrated with borehole logging. Hydrologic parameters such as permeability shall not be determined on the basis of laboratory analysis of samples alone; a sufficient amount of field testing (e.g., pump tests) shall be conducted to assure actual field properties are adequately understood. Testing shall be conducted to allow estimating chemi-sorption attenuation properties of underlying soil and rock.

• Location, extent, quality, capacity and current uses of any groundwater at and near the site.

Furthermore, steps shall be taken during stockpiling of ore to minimize penetration of radionuclides into underlying soils; suitable methods include lining and/or compaction of ore storage areas.

Criterion 6—Sufficient earth cover, but not less than three meters, shall be placed over tailings or wastes at the end of milling operations to result in a calculated reduction in surface exhalation of radon emanating from the tailings or wastes to less than two picocuries per square meter per second. In computing required tailings cover thicknesses, moisture in soils in excess of amounts found normally in similar soils in similar circumstances shall not be considered. Direct gamma exposure from the tailings or wastes should be reduced to background levels. The effects of any thin synthetic layer shall not be taken into account in determining the calculated radon exhalation level. If non-soiled materials are proposed to reduce tailings covers to less than three meters, it must be demonstrated that such materials will not crack or degrade by differential settlement, weathering, or other mechanism, over long term time intervals. Near surface cover materials (i.e., within the top three meters) shall not include mine waste or rock that contains elevated levels of radium; soils used for near surface cover must be essentially the same, as far as radioactivity is concerned, as that of surrounding surface soils. This is to ensure that surface radon exhalation is not significantly above background because of the cover material itself.

Criterion 7—At least one full year prior to any major site construction, a preoperational monitoring program shall be conducted to provide complete baseline data on a milling site and its environs. Throughout the construction and operating phases of the mill, an operational monitoring program shall be conducted to measure or evaluate compliance with applicable standards and regulations; to evaluate performance of control systems and procedures; to evaluate environmental impacts of operation; and to detect potential long term effects.

Criterion 8—Milling operations shall be conducted so that all airborne effluent releases are reduced to levels as low as is reasonably achievable. The primary means of accomplishing this shall be by means of emission controls. Institutional controls, such as extending the site boundary and exclusion area, may be employed to ensure that offsite exposure limits are met, but only after all practicable measures have been taken to control emissions at the source. Notwithstanding the existence of individual dose standards, strict control of emissions is necessary to assure that population exposures are reduced to the maximum extent reasonably achievable and to avoid site contamination. The greatest potential sources of offsite radiation exposure (aside from radon exposure) are dusting from dry surfaces of the tailings disposal area not covered by tailings solution and emissions from yellowcake drying and packaging operations.

Checks shall be made and logged hourly of all parameters (e.g., differential pressures and scrubber water flow rates) which determine the efficiency of yellowcake stack emission control equipment operation. It shall be determined whether or not conditions are within a range prescribed to ensure that the equipment is operating consistently near peak efficiency; corrective action shall be taken when performance is outside of prescribed ranges. Effluent control devices shall be operative at all times during drying and packaging operations and whenever air is exhausting from the yellowcake stack. Drying and packaging operations shall terminate when controls are inoperative. When checks indicate the equipment is not operating within the range prescribed for peak efficiency, actions shall be taken to restore parameters to the prescribed range. When this cannot be done without shutdown and repairs, drying and packaging operations shall cease as soon as practicable. Operations may not be re-started after cessation due to off-normal performance until needed corrective actions have been identified and implemented. All such cessations, corrective actions, and re-starts shall be reported to the appropriate NRC regional office as indicated in Criterion 8A, in writing, within 10 days of the subsequent restart.

To control dusting from tailings, that portion not covered by standing liquids shall be wetted or chemically stabilized to prevent or minimize blowing and dusting to the maximum extent reasonably achievable. This requirement may be relaxed if tailings are effectively sheltered from wind, such as may be the case where they are disposed of below grade and the tailings surface is not exposed to wind. Consideration shall be given in planning tailings disposal programs to methods which would allow phased covering and reclamation of tailings impoundments since this will help in controlling particulate and radon emissions during operation. To control dusting from diffuse sources, such as tailings and ore pads where automatic controls do not apply, operators shall develop written operating procedures specifying the methods of control which will be utilized.

Criterion 8A—Daily inspections of tailings or waste retention systems shall be conducted by a qualified engineer or scientist and documented. The appropriate NRC regional office as indicated in Appendix D of 10 CFR Part 20, or the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, shall be immediately notified of any failure in a tailings or waste retention system which results in a release of tailings or waste into unrestricted areas, and/or of any unusual conditions (conditions not contemplated in the design of the retention system) which if not corrected could indicate the potential or lead to failure of the system and result in a release of tailings or waste into unrestricted areas.

II. Financial Criteria

Criterion 9—Financial surety arrangements shall be established by each mill operator prior to the commencement of operations to assure that sufficient funds will be available to carry out the decontamination and decommissioning of the mill and site and for the reclamation of any tailings or waste disposal areas. The amount of funds to be ensured by such surety arrangements shall be based on Commission-approved cost estimates in a Commission-approved plan for (1) decontamination and decommissioning of mill buildings and the milling site to levels which would allow unrestricted use of these areas upon decommissioning, and (2) the reclamation of tailings and/or waste disposal areas in accordance with technical criteria delineated in Section I of this Appendix. The licensee shall submit this plan in conjunction with an environmental report that addresses the expected environmental impacts of the milling operation, decommissioning and tailings reclamation, and evaluates alternatives for mitigating these impacts. The surety shall also cover the payment of the charge for long term surveillance and control required by Criterion 10. In establishing specific surety arrangements, the licensee's cost estimates shall take into account total costs that would be incurred if an independent contractor were hired to perform the decommissioning and reclamation work. In order to avoid unnecessary duplication and expense, the Commission may accept financial sureties that have been consolidated with financial or surety arrangements established to meet requirements of other Federal or state agencies and/or local governing bodies for such decommissioning, decontamination, reclamation, and long term site surveillance and control, provided such arrangements are considered adequate to satisfy these requirements and that the portion of the surety which covers the decommissioning and reclamation of the mill, mill tailings site and associated areas, and the long term funding charge is clearly identified and committed for use in accomplishing these activities. The licensee's surety mechanism will be reviewed annually by the Commission to assure that sufficient funds would be available for completion of the reclamation plan if the work had to be performed by an independent contractor. The amount of surety liability should be adjusted to recognize any

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increases or decreases resulting from inflation, changes in engineering plans, activities performed, and any other conditions affecting costs. Regardless of whether reclamation is phased through the life of the operation or takes place at the end of operations, an appropriate portion of surety liability shall be retained until final compliance with the reclamation plan is determined. This will yield a surety that is at least sufficient at all times to cover the costs of decommissioning and reclamation of the areas that are expected to be disturbed before the next license renewal. The term of the surety mechanism must be open ended, unless it can be demonstrated that another arrangement would provide an equivalent level of assurance. This assurance could be provided with a surety instrument which is written for a specified period of time (e.g., five years) yet which must be automatically renewed unless the surety notifies the beneficiary (the Commission or the State regulatory agency) and the principal (the licensee) some reasonable time (e.g., 90 days) prior to the renewal date of their intention not to renew. In such a situation the surety requirement still exists and the licensee would be required to submit an acceptable replacement surety within a brief period of time to allow at least 60 days for the regulatory agency to collect.

Proof of forfeiture must not be necessary to collect the surety so that in the event that the licensee could not provide an acceptable replacement surety within the required time, the surety shall be automatically collected prior to its expiration. The conditions described above would have to be clearly stated on any surety instrument which is not open-ended, and must be agreed to by all parties. Financial surety arrangements generally acceptable to the Commission are:

(a) Surety bonds;
(b) Cash deposits;
(c) Certificates of deposit;
(d) Deposits of government securities;
(e) Irrevocable letters or lines of credit; and
(f) Combinations of the above or such other types of arrangements as may be approved by the Commission. However, self insurance, or any arrangement which essentially constitutes self insurance (e.g., a contract with a state or federal agency), will not satisfy the surety requirement since this provides no additional assurance other than that which already exists through license requirements.

Criterion 10—A minimum charge of $250,000 (1978 dollars) to cover the costs of long term surveillance shall be paid by each mill operator to the general treasury of the United States or to an appropriate State agency prior to the termination of a uranium or thorium mill license.

If site surveillance or control requirements at a particular site are determined, on the basis of a site-specific evaluation, to be significantly greater than those specified in Criterion 12, (e.g., if fencing is determined to be necessary) variance in funding requirements may be specified by the Commission. In any case, the total charge to cover the costs of long term surveillance shall be such that, with and assumed 1 percent annual real interest rate, the collected funds will yield interest in an amount sufficient to cover the annual costs of site surveillance. The total charge will be adjusted annually prior to actual payment to recognize inflation. The inflation rate to be used is that indicated by the change in the Consumer Price Index published by the U.S. Department of Labor, Bureau of Labor Statistics.

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III. Site and Byproduct Material Ownership

Criterion 11—A. These criteria relating to ownership of tailings and their disposal sites become effective on November 8, 1981, and apply to all licenses terminated, issued, or renewed after that date.

B. Any uranium or thorium milling license or tailings license shall contain such terms and conditions as the Commission determines necessary to assure that prior to termination of the license, the licensee will comply with ownership requirements of this criterion for sites used for tailings disposal.

C. Title to the byproduct material licensed under this Part and land, including any interests therein (other than land owned by the United States or by a State) which is used for the disposal of any such byproduct material, or is essential to ensure the long term stability of such disposal site, shall be transferred to the United States or the State in which such land is located, at the option of such State. In view of the fact that physical isolation must be the primary means of long term control, and Government land ownership is a desirable supplementary measure, ownership of certain severable subsurface interests (for example, mineral rights) may be determined to be unnecessary to protect the public health and safety and the environment. In any case, however, the applicant/operator must demonstrate a serious effort to obtain such subsurface rights, and must, in the event that certain rights cannot be obtained, provide notification in local public land records of the fact that the land is being used for the disposal of radioactive material and is subject to either an NRC general or specific license prohibiting the disruption and disturbance of the tailings. In some rare cases, such as may occur with deep burial where no ongoing site surveillance will be required, surface land ownership transfer requirements may be waived. For licenses issued before November 8, 1981, the Commission may take into account the status of the ownership of such land, and interests therein, and the ability of a licensee to transfer title and custody thereof to the United States or a State.

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D. If the Commission subsequent to title transfer determines that use of the surface or subsurface estates, or both, of the land transferred to the United States or to a State will not endanger the public health, safety, welfare, or environment, the Commission may permit the use of the surface or subsurface estates, or both, of such land in a manner consistent with the provisions provided in these criteria. If the Commission permits such use of such land, it will provide the person who transferred such land with the right of first refusal with respect to such use of such land.

E. Material and land transferred to the United States or a State in accordance with this Criterion shall be transferred without cost to the United States or a State other than administrative and legal costs incurred in carrying out such transfer.

F. The provisions of this Part respecting transfer of title and custody to land and tailings and wastes shall not apply in the case of lands held in trust by the United States for any Indian tribe or lands owned by such Indian tribe subject to a restriction against alienation imposed by the United States. In the case of such lands which are used for the disposal of byproduct material, as defined in this Part, the licensee shall enter into arrangements with the Commission as may be appropriate to assure the long term surveillance of such lands by the United States.

45 FR 65521

IV. Long-Term Site Surveillance

Criterion 12—The final disposition of tailings or wastes at milling sites should be such that ongoing active maintenance is not necessary to preserve isolation. As a minimum, annual site inspections shall be conducted by the government agency retaining ultimate custody of the site where tailings, or wastes are stored to confirm the integrity of the stabilized tailings or waste systems and to determine the need, if any, for maintenance and/or monitoring. Results of the inspection shall be reported to the Commission within 60 days following each inspection. The Commission may require more frequent site inspections if, on the basis of a site-specific evaluation, such a need appears necessary due to the features of a particular tailings or waste disposal system.

48 FR 35350

Addendum to Appendix A

In order to comply with section 18(a) of Pub. L. 97-415, the Nuclear Regulatory Commission is suspending the following portions of Appendix A to 10 CFR Part 40.

1. Criterion 1.

(a) In the first paragraph suspend the phrases ". . . for thousands of years . . ." and ". . . without ongoing active maintenance . . . ."

(b) In the second listed item of the first paragraph, suspend the word "usable."

(c) Suspend the last paragraph reading, "Tailings shall be disposed of in a manner that no active maintenance is required to preserve conditions of the site."

2. Criterion 3.

Suspend Criterion 3 in its entirety.

3. Criterion 4.

(a) Suspend paragraph (a) in its entirety.

(b) Suspend paragraph (b) in its entirety.

(c) In the first sentence of paragraph (c), suspend the phrase ". . . be relatively flat after final stabilization to minimize erosion potential and to. . . ."

(d) Suspend the remainder of paragraph (c) beginning with "The broad objective . . ." and ending with ". . . identified."

(e) Suspend the first sentence of paragraph (d), beginning "A full self-sustaining vegetative . . ." and ending ". . . to negligible levels."

(f) Suspend the second and third sentences of paragraph (d) beginning with "Where a full . . ." and ending with ". . . pile."

(g) In the fourth sentence of paragraph (d) beginning "The following factors . . .," suspend the words "the final" in the phrase ". . . in establishing the final rock cover . . . ."

(h) In the first listed item in paragraph (d), suspend the parenthetical phrase "(excepting bedding material average particles size shall be at least cobble size or greater)."

(i) Suspend the fourth paragraph of paragraph (d) beginning with "Individual rock fragments shall . . ." and ending with ". . . shall not be used." in its entirety.

(j) In the fifth paragraph of paragraph (d) beginning with "Rock covering . . ." and ending with ". . . of this Criterion." suspend all of the text beginning with ". . . where top covers are very thick . . . and ending with ". . . of this Criterion."

(k) Suspend the first sentence of the last paragraph of paragraph (d) beginning "Furthermore, all impoundments . . ." and ending ". . . slope gradient."

(l) In the second sentence of the last paragraph of paragraph (d) suspend "In addition to rock cover on slopes . . ." and ". . . with substantial rock cover (rip rap)."

(4) Criterion 5.

(a) In the first paragraph, suspend the first two sentences beginning "Steps shall be taken . . ." and ending ". . . potential uses." and the phrase ". . . in order to accomplish this objective." in the third sentence.

(b) In the first listed item under the first paragraph beginning with "Installation of . . ." suspend the reference to "low permeability" as a characteristic of bottom liners. Also suspend the last two sentences beginning with "Where clay liners . . ." and ending with "exposure).)"

(c) In the second paragraph beginning "Where ground water impacts . . ." suspend the phrase "to its potential use before milling operations began to the maximum extent practicable."

(d) Suspend in its entirety the third paragraph beginning "While the primary method of protecting groundwater shall be isolation . . ." and ending ". . . from current or potential uses."

(e) In the first sentence of the fifth paragraph beginning "This information shall be gathered . . ." suspend the word "usable" where it modifies "groundwater."

5. Criterion 6.

(a) In the first sentence suspend the phrases ". . . but not less than three meters . . . ." and ". . . to less than two picocuries per square meter per second."

(b) In the fifth sentence beginning "If non soiled (sic) materials . . ." suspend the phrases ". . . to reduce tailings cover to less than three meters, . . ." and ". . . crack or . . . ".

(c) Suspend the last and second to last sentences referring to near-surface cover materials not containing elevated levels of radium, and being, as far as radioactivity is concerned, essentially the same as surrounding surface soils.

6. Criterion 12. Suspend the first sentence which states that final disposition of tailings should be such that ongoing active maintenance is not necessary to presereve isolation.

48 FR 35350

7. Criteria 2, 7, 8, 9, 10, and 11 are not affected by the EPA proposal and no suspension is necessary for any portion of those criteria. Note: See notice dated May 26, 1983 (48 FR 23649) and the preamble to this final suspension for discussion.

This suspension in its entirety will terminate on April 1, 1984, without further notice or action by the Commission. The suspension may be terminated earlier than April 1, 1984, as part of a Commission final rule that would modify Appendix A in accordance with section 275 of the Atomic Energy Act of 1954, as amended.

PART 40

DOMESTIC LICENSING OF SOURCE MATERIAL

PROPOSED RULE MAKING

46 FR 29712
Published 6/3/81
Comments should be submitted on or before August 3, 1981. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before that date.

Upgraded Emergency Preparedness for Certain Fuel Cycle and Materials Licensees

See Part 30 Proposed Rule Making

47 FR 52452
Published 11/22/82
Written comments must be received on or before 1/21/83. Comments received after 1/21/83, will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments filed on or before this date.

Authority for the Copying of Records and Retention Periods for Security Records.

See Part 19 Proposed Rule Making

49 FR 46418
Published 11/26/84
Comment period expires 1/10/85.
Comment period extended to 2/10/85

10 CFR Part 40

Uranium Mill Tailing Regulations; Conforming NRC Requirements to EPA Standards

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is proposing to amend its regulations governing the disposal of uranium mill tailings. The proposed rule changes are intended to conform existing NRC regulations to the regulations published by the Environmental Protection Agency for the protection of the environment from these wastes. This action is being taken to comply with the legislative mandate set out in the Uranium Mill Tailings Radiation Control Act and the NRC Authorization Act for FY 1983.

DATE: The comment period expires on January 10, 1985. Comments received after this date will be considered if it is practical to do so but assurance of consideration may not be given except for comments received on or before this date.

ADDRESSES: Mail comments to Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. Deliver comments to Room 1121, 1717 H Street NW, Washington, DC between 8:15 a.m. and 5:00 p.m. weekdays.

FOR FURTHER INFORMATION CONTACT: Robert Fonner, Office of the Executive Legal Director, telephone (301) 492-8592, or Kitty S. Dragonette, Division of Waste Management, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 427-4300.

SUPPLEMENTARY INFORMATION: The Nuclear Regulatory Commission (NRC or Commission) is proposing modifications to its regulations for the purpose of conforming them to generally applicable requirements recently promulgated by the Environmental Protection Agency (EPA). These new EPA requirements are contained in Subparts D and E of 40 CFR Part 192 (48 FR 45926; October 7, 1983), are applicable to the management of uranium and thorium byproduct material, and became effective for NRC and Agreement State licensees and license applicants on December 6, 1983. The action proposed herein would modify previously existing regulations of the Commission to conform them to the new EPA requirements, and would incorporate certain of the new EPA

requirements into the Commission's regulations. The affected Commission regulations are contained in Appendix A to 10 CFR Part 40, which was promulgated in final form on October 3, 1980 (45 FR 65521).

The modifications to Commission regulations proposed herein will incorporate within NRC regulations some of the new EPA requirements. The action that the Commission will take with respect to the remainder of these new EPA requirements is the subject of an Advanced Notice of Proposed Rulemaking (ANPRM), which requests comment on that subject, also issued this day. These new EPA requirements were developed and issued by EPA pursuant to section 275b. of the Atomic Energy Act (42 U.S.C. 2022), as added by section 206 of Pub. L. 95–604, the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA). Under section 18(a) of Pub. L. 97–415, the Nuclear Regulatory Commission Authorization Act for fiscal years 1982 and 1983, the Commission was directed to conform its regulations to EPA's with notice and opportunity for public comment. Today's proposal addresses that responsibility.

Previous Actions

In keeping with section 18(a) of the NRC Authorization Act, the Commission suspended portions of its October 3, 1980 mill tailings regulations after notice and opportunity for public comment (48 FR 35350; August 4, 1983). As required by the Act, this suspension terminated automatically April 1, 1984. Those portions of the Commission's regulations which were suspended were those that were determined to be in conflict or inconsistent with EPA's proposed requirements. More specifically, the suspended portions were those that would require a major commitment or major action by licensees which would be unnecessary if: (1) The EPA proposed standards were promulgated in final form without modification, and (2) the Commission's regulations were modified to conform to the EPA standards. The objective of the suspension was to avoid a situation where a licensee or applicant might make a major commitment or take a major action which would be unnecessary or ill-advised after subsequent rulemaking to modify permanently the existing regulations on the basis of EPA's final standards.

The final EPA standards are very similar to those that were proposed. Nevertheless, the Commission has reconsidered the appropriateness of changes to Appendix A to 10 CFR Part 40 in light of the new EPA standards, and the need for additional supporting documentation. The changes proposed today are more modest than the previous suspension.

Scope of This Proposal

In addition to conforming its existing regulations to new EPA standards, under the provisions of the UMTRCA, the Commission has a further legislated responsibility: it must establish general requirements, for the management of byproduct material, with EPA concurrence, which are, to the maximum extent practicable, at least comparable to requirements applicable to the management of similar hazardous material regulated by the EPA under the Solid Waste Disposal Act (SWDA), as amended. The Commission deliberated as to how best to deal with these related rulemaking needs and decided on the course of action resulting in this proposal and the accompanying ANPRM. This proposal addresses all the changes to the existing Commission regulations in Appendix A to 10 CFR Part 40 that can be legally promulgated without additional supporting documentation. Other changes to the Commission's regulations for mill tailings management resulting from the EPA standard are the subject of the accompanying ANPRM.

The content of these two rulemakings also may be characterized in terms of the need for EPA concurrence, although that was not the deciding factor. This proposal consists of modifications not requiring EPA concurrence, including conforming changes to existing NRC rules and incorporation of EPA requirements not deriving from the SWDA. Those modifications that are the subject of the ANPRM accompanying this proposal deriving from the SWDA require EPA concurrence pursuant to section 84 of the Atomic Energy Act. Modifications addressed in the ANPRM include: (1) Incorporation into NRC regulations of SWDA requirements already imposed by the EPA, (2) any further modifications to NRC regulations necessary to establish SWDA-comparable requirements as called for by the UMTRCA, and (3) any further modifications needed to address prescriptive provisions that were suspended prior to April 1, 1984 but not proposed for modification by this action. This course of action was chosen to allow the Commission to both conform its regulations to EPA's and incorporate non-SWDA provisions in a prompt and orderly manner and deal with the complex of SWDA requirements and issues in a separate, comprehensive and unified rulemaking.

Content of This Proposal

The new EPA requirements in 40 CFR Part 192, (48 FR 45926) included by reference several sections from 40 CFR Part 264, promulgated by the EPA pursuant to authority provided by the Resource Conservation and Recovery Act (RCRA), which modified the SWDA. These SWDA (or RCRA) requirements imposed under 40 CFR Part 192 are addressed in the ANPRM accompanying this proposal. The few conforming changes to NRC's existing Appendix A regulations made necessary by these newly imposed SWDA requirements are addressed in this document, as are conforming changes and other changes necessary to reflect and incorporate the non-SWDA elements of EPA's new requirements. These non-SWDA provisions include requirements to—

(1) Adhere to applicable requirements in 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations" for uranium byproduct material, and essentially the same requirements for thorium byproduct material;

(2) Adhere to applicable requirements in 40 CFR Part 440, "Ore Mining and Dressing Point Source Category: Effluent Limitations Guidelines and New Source Performance Standards, Subpart C, Uranium, Radium, and Vanadium Ores Subcategory."

(3) Maintain releases of radon to the atmosphere during operations as low as is practicable;

(4) Close disposal areas so as to provide reasonable assurance of effective control for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years;

(5) Limit average post-closure releases of radioactive radon gas to no more than 20 picocuries per square meter per second (pCi/m^2-s); and

(6) Set limits for residual concentrations of radioactive radium left in soil, above background, in onsite areas not subject to the closure requirements for longevity and radon release control.

Proposed Modifications and Rationale

In accordance with the above, the Commission proposes the following modifications to Appendix A to 10 CFR Part 40:

1. Introduction

(a) In the second sentence of the third paragraph, change "amendability" to "amenability."

Reason: This change corrects a typographical error.

(b) Delete the fourth paragraph in its entirety.

Reason: This change deletes an information submittal requirement which was established in connection with implementation of the original Appendix A criteria. The due date originally set for submittals is past. A new due date for revised submittals is not considered necessary.

(c) Add the following paragraph at the end: "Licensees or applicants may propose alternatives to the specific requirements in this Appendix. The

alternative proposals may take into account local or regional conditions, including geology, topography, hydrology, and meteorology. The Commission may find that the proposed alternatives meet the Commission's requirements if the alternatives will achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety, and the environment from radiological and nonradiological hazards associated with the sites, which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by the requirements of this Appendix and the standards promulgated by the Environmental Protection Agency in 40 CFR Part 192, Subparts D and E."

Reason: The flexibility to propose alternatives to the Commission's and EPA standards was included in Pub. L. 97–415 changes to the AEA. The added paragraph paraphrases the language in Section 84c. The added paragraph explicitly acknowledges the legislative intent and provides licensees and applicants the opportunity to propose alternatives as a routine licensing matter. Licensees would have to provide a site specific rationale to enable the Commission to make the required finding. This generic approach was taken instead of modifying individual criteria to provide flexibility. A generic approach avoids the chance of not identifying all areas where flexibility may be needed and preserves the existing support for Appendix A. Administratively, alternatives are easier to process under an explicit provision than exceptions to rules.

2. Criterion 1

(a) In the first paragraph delete the phrase "* * * for thousands of years * * *" and insert "* * * *."

Reason: The thousands of years language conflicts with the 40 CFR 192.32(b) standard of design of control measures to be effective for 1,000 years.

(b) In the second listed item of the first paragraph, delete the word "usable."

Reason: Both 40 CFR 264.221 and 40 CFR 264.92, which are included by reference in 40 CFR 192.32(a), require isolation of contaminants from all qualities of groundwater, not just usable groundwater sources.

3. Criterion 3

(a) Delete the modifiers "high quality" for groundwater in the second sentence of the second paragraph.

Reason: The EPA standards require protection of all qualities of groundwater, not just high quality sources.

4. Criterion 4

(a) Revise paragraph (a) by deleting "maximum possible flood" and inserting "Probable Maximum Flood."

Reason: Probable Maximum Flood reflects the appropriate hydrologic terms for a design basis and the original intent of the provision when Appendix A was promulgated.

5. Criterion 5

(a) In the first paragraph, delete the first two sentences beginning "Steps shall be taken * * *" and ending "potential uses." and the phrase "* * * in order to accomplish this objective." in the third sentence.

Reason: The EPA groundwater protection standards referenced in 40 CFR 192.32(a) do not permit any seepage to groundwater.

(b) In the first listed item under the first paragraph beginning with "Installation of * * *" delete the words "low permeability" as a characteristic of bottom liners.

Reason: The EPA groundwater protection standard referenced in 40 CFR 192.32(a) requires a liner that prevents migration of wastes out of the impoundment into the adjacent soil and groundwater. Low permeability implies that some migration is allowed.

(c) In the second paragraph beginning "Where groundwater impacts * * *" delete the phrase "to its potential use before milling operations began to the maximum extent practicable."

Reason: The EPA standard in 40 CFR 192.33, by referencing 40 CFR 264.100, requires a corrective action program to restore groundwater to standards established under 40 CFR 264.92–264.94. This standard is essentially a nondegradation standard. Restoration of groundwater quality only to the extent necessary to restore its potential use is inconsistent with EPA standard.

(d) Delete in its entirety the third paragraph beginning "While the primary method of protecting groundwater shall be isolation * * *" and ending "* * * from current or potential uses."

Reason: The EPA standards for groundwater protection in 40 CFR 192.32(a) protect groundwater primarily on the basis of background-level concentration limits for harzardous constitutents, and not in terms of current or potential uses. The deleted sentence allowed consideration of tailings in contact with groundwater. The EPA standard permits no seepage to groundwater.

(e) In the first sentence of the fifth paragraph beginning "This information shall be gathered * * *" delete the word "usable" where it modifies "groundwater."

Reason: The EPA standard in 10 CFR 192.32(a) does not distinguish between "usable" and nonusable acquifers. The groundwater protection standard applies universally to acquifers of any quality or potential use.

6. Criterion 6

(a) Delete the first sentence in entirety, beginning with "Sufficient earth cover * * *" and ending with "* * * meter per second.", and in its place insert "In cases where waste byproduct material is to be permanently disposed, an earthen cover shall be placed over tailings or wastes at the end of milling operations and the waste disposal area shall be closed in accordance with a design [1] which shall provide reasonable assurance of control of radiological hazards to: (i) Be effective for one thousand years, to the extent reasonably achievable, and, in any case, for at least 200 years, and (ii) limit releases of radon-222 from uranium byproduct materials, and radon-220 from thorium byproduct materials, to the atmosphere so as to not exceed an average [2] release rate of 20 picocuries per square meter per second (pCi/m^{2}s)."

Reason: The change replaces previous Commission requirements for minimum cover thickness and post-closure radon control with the EPA standards for longevity and radon control. The EPA standard in 40 CFR 192.32(b) for environmental protection after closure specifies that the control method must provide reasonable assurance that releases of radon-222 do not exceed 20 picocuries per square meter per second, rather than 2 picocuries. Under the EPA standard the thickness of cover will be a function of longevity and radon release and will be determined based on meeting the 20 value instead of 2. The three meter minimum precriptive requirement was developed to achieve a 2 picocurie emanation rate based on the assumed typical soil conditions.

(b) Add to Criterion 6 the following two footnotes which accompany the revised first sentence: footnote: (1) "The standard applies to design. Monitoring for radon after installation of an appropriately designed cover is not required," and footnote (2) "This average shall apply to the entire surface of each disposal area over periods of at least one year, but short compared to 100 years. Radon will come from both uranium byproduct materials and from covering materials. Radon emissions from covering materials should be estimated as part of developing a closure plan for each site. The standard, however, applies only to emissions from byproduct materials to the atmosphere."

Reason: This change fully incorporates the EPA radon control standard.

(c) In the fifth sentence of the first paragraph, replace "non-soiled" with "non-soil," and replace the words "to reduce tailings covers to less than three meters" with the words "as cover

materials."

Reason: The first change corrects a typographical error. The second is an editorial change to be consistent with the deletion of the three meter minimum requirement as discussed in (a) above.

(d) At the end of Criterion 6, add a new paragraph to read: "The design requirements in this Criterion for longevity and control of radon releases shall apply to any portion of a licensed and/or disposal site unless such portion contains a concentration of radium in land, averaged over areas of 100 square meters, which, as a result of byproduct material does not exceed the background level by more than: (i) 5 picocuries per gram (pCi/g) of radium-226, or, in the case of thorium byproduct material, radium-228, averaged over the first 15 centimeters (cm) below the surface, and (ii) 15 pCi/g of radium-226, or, in the case of thorium byproduct material, radium-228, averaged over 15-cm thick layers more than 15 cm below the surface."

Reason: This change incorporates the EPA requirements for site cleanup outside the actual disposal area, in areas where the longevity and radon control closure standards are not applicable (see 40 CFR 192.32(b)(2) and 192.41).

7. Criterion 8

(a) At the end of the first full paragraph, add a new sentence to read "During operations and prior to closure, radiation doses from radon emissions from surface impoundments shall be kept as low as is practicable."

Reason: This change incorporates the EPA requirement imposed under 40 CFR 192.32(a)(4).

(b) Following the third full paragraph of Criterion 8, just before Criterion 8A, insert the following two new paragraphs:

"Milling operations producing or involving thorium byproduct material shall be conducted in such a manner as to provide reasonable assurance that the annual dose equivalent does not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public as a result of exposure to the planned discharge of radioactive materials, radon-220 and its daughters excepted, to the general environment."

"Uranium and thorium byproduct materials shall be managed so as to conform to the applicable provisions of Title 40 of the Code of Federal Regulations, Part 440, Ore Mining and Dressing Point Source Category: Effluent Limitations Guidelines and New Source Performance Standards, Subpart C, Uranium, Radium, and Vanadium Ores Subcategory, as codified on January 1, 1983."

Reason: These new paragraphs incorporate EPA requirements imposed under 40 CFR 192.41(d) and 40 CFR 192.32(a)(3), respectively.

8. Criteria 2, 7, 9, 10, 11, and 12 are not affected by the new EPA standards or editorial changes and no modification is proposed for any portion of those criteria.

Commission Authority and Responsibility

Section 84c. of the Atomic Energy Act state that: A Licensee may propose alternatives to specific requirements adopted and enforced by the Commission under this act. Such alternative proposals may take into account local or regional conditions, including geology, topography, hydrology and meteorology. The Commission may treat such alternatives as satisfying Commission requirements if the Commission determines that such alternatives will achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety, and the environment from radiological and nonradiological hazards associated with such sites, which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by standards and requirements adopted and enforced by the Commission for the same purpose and any final standards promulgated by the Administrator of the Environmental Protection Agency in accordance with section 275.

The Commission historically has had the authority and responsibility to regulate the activities of persons licensed under the Atomic Energy Act of 1954, as amended. Consistent with that authority and in accordance with section 84c. of that Act, the Commission has the discretion to review and approve site specific alternatives to standards promulgated by the Commission and by the Administrator of the Environmental Protection Agency. In the exercise of this authority, Section 84c. does not require the Commission to obtain the concurrence of the Administrator in any site specific alternative which satisfies Commission requirements for the level of protection for public health, safety, and the environment from radiological and nonradiological hazards at uranium mill tailing sites. As an example, the Commisson need not seek concurrence of the Administrator is case-by-case determinations of alternative concentration limits and delisting of hazardous constitutents for specific sites. It should be understood that the proposed conforming regulations deal with the exercise of the Commission's responsibility and authority under the Atomic Energy Act of 1954, solely as regards uranium mill tailings sites and have no broader connotation.

The Commission believes that licensee proposals for alternatives can be an important and effective way to help deal with the problems associated with implementing the new EPA standards. The Commission expects that it may require several years to have its conforming regulations fully in place. It expects to use the flexibility provided by section 84 in the interim to consider and approve alternative proposals from licensees. Section 84c. provides NRC sufficient authority to independently approve alternatives so long as the Commission can make the required determination.

Impact of the Proposed Amendments

The Commission's action in proposing these modifications to its regulations in Appendix A to 10 CFR Part 40 is to conform them to the new EPA standards. These changes are for the purpose of avoiding conflicts and inconsistencies, and for clarifying previously existing language so as to be compatible with the new requirements. The action proposed here by the Commission is a consequence of previous actions taken by the Congress and the EPA, and is legally mandated in section 275b(3) of the Atomic Energy Act of 1954, as amended.

Commission action in this case is esentially nondiscretionary in nature, and for purposes of environmental analysis, rests upon existing environmental and other impact evaluations in the following documents: (1) "Final Environmental Impact Statement for Standards for the Control of Byproduct Materials from Uranium Ore Processing (40 CFR Part 192)." Volumes 1 and 2, EPA 520/1–83–008–1 and 2, September 1983, and (2) "Regulatory Impact Analysis of Final Environmental Standards for Uranium Mill Tailing at Active Sites," EPA 520/1–83–010, September 1983, both prepared in support of Subparts D and E of 40 CFR Paret 192, and (3) "Final Generic Environmental Impact Statement on Uranium Milling," NUREG–0706, September 1980, prepared in support of Appendix A of 10 CFR Part 40. The Commission believes that these supporting analyses for the new EPA standards and the existing Commission regulations provide a more than adequate environmental review for the standards addresed herein, and that no additional impact analysis is warranted by the conforming actions proposed herein. The EPA engaged in and completed a NEPA process with full consideration of environmental concerns, and for the purposes of this rulemaking action, can be viewed as the lead agency.

Paperwork Reduction Act Statement

This proposed rule does not contain a new or amended information collection requirement subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). Existing requirements were approved by the Office of Management and Budget approval number 3150-0020.

Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule will not, if promulgated, have a significant economic impact upon a substantial number of small entities. Therefore, we have not performed a Regulatory Flexibility Analysis. The basis for this finding is that of the licensed uranium mills, only one qualifies as a small entity. Almost all the mills are owned by large corporations. Three of the mills are partly-owned by companies that could qualify as small businesses, according to the Small Business Administration generic small entity definition of 500 employees. However, under the Regulatory Flexibility Act, a small business is one that is independently owned and operated. Since these three mills are not independently owned they do not qualify as small entities.

List of Subjects in 10 CFR Part 40

Government contracts, Hazardous materials-transportation, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Source material, and Uranium.

Under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, 5 U.S.C. 553, and the Uranium Mill Tailings Radiation Control Act of 1978, as amended, the NRC is proposing the following amendments to 10 CFR Part 40.

PART 40—DOMESTIC LICENSING OF SOURCE MATERIAL

1. The authority citation for Part 40 is revised to read as follows:

Authority: Secs. 62, 63, 64, 65, 81, 161, 182, 183, 186, 68 Stat. 932, 933, 935, 948, 953, 954, 955, as amended, secs. 11e(2), 83, 84, Pub. L. 95-604, 92 Stat. 3033, as amended, 3039, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2014(e)(2), 2092, 2093, 2094, 2095, 2111, 2113, 2114, 2201, 2232, 2233, 2236, 2282); secs. 274, Pub. L. 86-373, 73 Stat. 688 (42 U.S.C. 2021); sec. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846). Section 275, 92 Stat. 3021, as amended by Pub. L. 97-415, 96 Stat. 2067 (42 U.S.C. 2022).

Section 40.7 also issued under Pub. L. 95-601, sec. 10,92 Stat. 2951 (42 U.S.C. 5851). Section 40.31(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 40.46 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 40.71 also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); §§ 40.3, 40.25(d)(1)-(3), 40.35(a)-(d), 40.41 (b) and (c), 40.46, 40.51 (a) and (c), and 40.63 are issued under sec. 161b, 68 Stat. 948, as amended, (42 U.S.C. 2201(b)); and §§ 40.25 (c) and (d) (3) and (4), 40.26(c)(2), 40.35(e), 40.42, 40.61, 40.62, 40.64 and 40.65 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

Appendix A—[Amended]

2. Appendix A to Part 40 is revised to read as follows:

Appendix A to Part 40—Criteria Relating to the Operation of Uranium Mills and the Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material From Ores Processed Primarily for Their Source Material Content

Introduction

Every applicant for a license to possess and use source material in conjunction with uranium or thorium milling, or byproduct material at sites formerly associated with such milling, is required by the provisions of § 40.31(h) to include in a license application proposed specifications relating to milling operations and the disposition of tailings or wastes resulting from such milling activities. This appendix establishes technical, financial, ownership, and long-term site surveillance criteria relating to the siting, operation, decontamination, decommissioning, and reclamation of mills and tailings or waste systems and sites at which such mills and systems are located. As used in this appendix, the term "as low as is reasonably achievable" has the same meaning as in § 20.1(c) of 10 CFR Part 20 of this chapter.

In many cases, flexibility is provided in the criteria to allow achieving an optimum tailings disposal program on a site-specific basis. However, in such cases the objectives, technical alternatives and concerns which must be taken into account in developing a tailings program are identified. As provided by the provisions of § 40.31(h) applications for licenses must clearly demonstrate how the criteria have been addressed.

The specifications shall be developed considering the expected full capacity of tailings or waste systems and the lifetime of mill operations. Where later expansions of systems or operations may be likely (for example, where large quantities of ore now marginally uneconomical may be stockpiled), the amendability of the disposal system to accommodate increased capacities without degradation in long-term stability and other performance factors shall be evaluated.

Licensees or applicants may propose alternatives to the specific requirements in this Appendix. The alternative proposals may take into account local or regional conditions, including geology, topography, hydrology, and meteorology. The Commission may find that the proposed alternatives meet the Commission's requirements if the alternatives will achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety, and the environment from radiological and nonradiological hazards associated with the sites, which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by the requirements of this Appendix and the standards promulgated by the Environmental Protection Agency in 40 CFR Part 192, Subparts D and E.

I. Technical Criteria

Criterion 1—In selecting among alternative tailings disposal sites or judging the adequacy of existing tailings sites, the following site features, which will determine the extent to which a program meets the broad objective of isolating the tailings and associated contaminants from man and the environment for 1,000 years, thereafter, without ongoing active maintenance shall be considered:

- Remoteness from populated areas;
- Hydrologic and other natural conditions as they contribute to continued immobilization and isolation of contaminants from groundwater sources; and
- Potential for minimizing erosion, disturbance, and dispersion by natural forces over the long term.

The site selection process shall be an optimization to the maximum extent reasonably achievable in terms of these features.

In the selection of disposal sites, primary emphasis shall be given to isolation of tailings or wastes, a matter having long-term impacts, as opposed to consideration only of short-term convenience or benefits, such as minimization of transportation or land acquisition costs. While isolation of tailings will be a function of both site and engineering design, overriding consideration shall be given to siting features given the long-term nature of the tailings hazards.

Tailings shall be disposed of in a manner that no active maintenance is required to preserve conditions of the site.

Criterion 2—To avoid proliferation of small waste disposal sites and thereby reduce perpetual surveillance obligations, byproduct material from in situ extraction operations, such as residues from solution evaporation or contaminated control processes, and wastes from small remote above ground extraction operations shall be disposed of at existing large mill tailings disposal sites; unless, considering the nature of the wastes, such as their volume and specific activity, and the costs and environmental impacts of transporting the wastes to a large disposal site, such offsite disposal is demonstrated to be impracticable or the advantages of onsite burial clearly outweigh the benefits of reducing the perpetual surveillance obligations.

Criterion 3—The "prime option" for disposal of tailings is placement below grade, either in mines or specially excavated pits (that is, where the need for any specially constructed retention structure is eliminated).

The evaluation of alternative sites and disposal methods performed by mill operators in support of their proposed tailings disposal program (provided in applicants' environmental reports) shall reflect serious consideration of this disposal mode. In some instances, below grade disposal may not be the most environmentally sound approach, such as might be the case if a groundwater formation is relatively close to the surface or not very well isolated by overlying soils and rock. Also, geologic and topographic conditions might make full below grade

burial impracticable: for example, bedrock may be sufficiently near the surface that blasting would be required to excavate a disposal pit at excessive cost, and more suitable alternative sites are not available. Where full below grade burial is not practicable, the size of retention structures, and size and steepness of slopes of associated exposed embankments shall be minimized by excavation to the maximum extent reasonably achievable or appropriate given the geologic and hydrologic conditions at a site. In these cases, it must be demonstrated that an above grade disposal program will provide reasonably equivalent isolation of the tailings from natural erosional forces.

Criterion 4—The following site and design criteria shall be adhered to whether tailings or wastes are disposed of above or below grade.

(a) Upstream rainfall catchment areas must be minimized to decrease erosion potential and the size of the Probable Maximum Flood which could erode or wash out sections of the tailings disposal area.

(b) Topographic features should provide good wind protection.

(c) Embankment and cover slopes shall be relatively flat after final stabilization to minimize erosion potential and to provide conservative factors of safety assuring long-term stability. The broad objective should be to contour final slopes to grades which are as close as possible to those which would be provided if tailings were disposed of below grade; this could, for example, lead to slopes about 10 horizontal to 1 vertical (10h:1v) or less steep. In general, slopes should not be steeper than about 5h:1v. Where steeper slopes are proposed, reasons why a slope less steep than 5h:1v would be impracticable should be provided, and compensating factors and conditions which make such slopes acceptable should be identified.

(d) A full self-sustaining vegetative cover shall be established or rock cover employed to reduce wind and water erosion to negligible levels.

Where a full vegetative cover is not likely to be self-sustaining due to climatic or other conditions, such as in semi-arid and arid regions, rock cover shall be employed on slopes of the impoundment system. The NRC will consider relaxing this requirement for extremely gentle slopes such as those which they may exist on the top of the pile.

The following factors shall be considered in establishing the final rock cover design to avoid displacement of rock particles by human and animal traffic or by natural process, and to preclude undercutting and piping:

- Shape, size, composition, and gradation of rock particles (excepting bedding material average particles size shall be at least cobble size or greater);
- Rock cover thickness and zoning of particles by size; and
- Steepness of underlying slopes.

Individual rock fragments shall be dense, sound, and resistant to abrasion, and shall be free from cracks, seams, and other defects that would tend to unduly increase their destruction by water and frost actions. Weak, friable, or laminated aggregate shall not be used.

Rock covering of slopes may not be required where top covers are very thick (on the order of 16m or greater); impoundment slopes are very gentle (on the order of 10 h:1v or less); bulk cover materials have inherently favorable erosion resistance characteristics; and, there is negligible drainage catchment area upstream of the pile and good wind protection as described in points (a) and (b) of this Criterion.

Furthermore, all impoundment surfaces shall be contoured to avoid areas of concentrated surface runoff or abrupt or sharp changes in slope gradient. In addition to rock cover on slopes, areas toward which surface runoff might be directed shall be well protected with substantial rock cover (rip rap). In addition to providing for stability of the impoundment system itself, overall stability, erosion potential, and geomorphology of surrounding terrain shall be evaluated to assure that there are not ongoing or potential processes, such as gully erosion, which would lead to impoundment instability.

(e) The impoundment shall not be located near a capable fault that could cause a maximum credible earthquake larger than that which the impoundment could reasonably be expected to withstand. As used in this criterion, the term "capable fault" has the same meaning as defined in section III(g) of Appendix A of 10 CFR 100. The term "maximum credible earthquake" means the earthquake which cause the maximum vibratory ground motion based upon an evaluation of earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material.

(f) The impoundment, where feasible, should be designed to incorporate features which will promote deposition. For example, design features which promote deposition of sediment suspended in any runoff which flows into the impoundment area might be utilized; the object of such a design feature would be to enhance the thickness of cover over time.

Criterion 5—The following shall be considered:

- Installation of bottom liners (Where synthetic liners are used, a leakage detection system shall be installed immediately below the liner to ensure major failures are detected if they occur. This is in addition to the groundwater monitoring program conducted as provided in Criterion 7. Where clay liners are proposed or relatively thin, in-situ clay soils are to be relied upon for seepage control, tests shall be conducted with representative tailings solutions and clay materials to confirm that no significant deterioration of permeability or stability properties will occur with continous exposure of clay to tailings solutions. Tests shall be run for a sufficient period of time to reveal any effects if they are going to occur (in some cases deterioration has been observed to occur rather rapidly after about nine months of exposure)).
- Mill process designs which provide the maximum practicable recycle of solutions and conservation of water to reduce the net input of liquid to the tailings impoundment.
- Dewatering of tailings by process devices and/or in-situ drainage systems (At new sites, tailings shall be dewatered by a drainage system installed at the bottom of the impoundment to lower the phreatic surface and reduce the driving head for seepage, unless tests show tailings are not amenable to such a system. Where in-situ dewatering is to be conducted, the impoundment bottom shall be graded to assure that the drains are at a low point. The drains shall be protected by suitable filer materials to assure that drains remain free running. The drainage system shall also be adequately sized to assure good drainage).
- Neutralization to promote immobilization of toxic substances.

Where groundwater impacts are occurring at an existing site due to seepage, action shall be taken to alleviate conditions that lead to excessive seepage impacts and restore groundwater quality. The specific seepage control and groundwater protection method, or combination of methods, to be used must be worked out on a site-specific basis. Technical specifications shall be prepared to control installation of seepage control systems. A quality assurance, testing, and inspection program, which includes supervision by a qualified engineer or scientist, shall be established to assure the specifications are met.

In support of a tailings disposal system proposal, the applicant/operator shall supply information concerning the following:

- The chemical and radioactive characteristics of the waste solutions.
- The characteristics of the underlying soil and geologic formations particularly as they will control transport of contaminants and solutions. This shall include detailed information concerning extent, thickness, uniformity, shape, and orientation of underlying strata. Hydraulic gradients and conductivities of the various formations shall be determined.

This information shall be gathered from borings and field survey methods taken within the proposed impoundment area and in surrounding areas where contaminants might migrate to groundwater. The information gathered on boreholes shall include both geologic and geophysical logs in sufficient number and degree of sophistication to allow determining significant discontinuities, fractures, and channeled deposits of high hydraulic conductivity. If field survey methods are used, they should be in addition to and calibrated with borehole logging. Hydrologic parameters such as permeability shall not be determined on the basis of laboratory analysis of samples alone; a sufficient amount of field testing (e.g., pump tests) shall be conducted to assure actual field properties are adequately understood. Testing shall be conducted to allow estimating chemi-sorption attenuation properties of underlying soil and rock.

- Location, extent, quality, capacity and current uses of any groundwater at and near the site.

Furthermore, steps shall be taken during stockpiling of ore to minimize penetration of radionuclides into underlying soils; suitable methods include lining and/or compaction of ore storage areas.

Criterion 6—In cases where waste byproduct material is to be permanently disposed an earthen cover shall be placed over tailings or wastes at the end of milling operations and, the waste disposal area shall be closed in accordance with a design[1]

[1] The standard applies to design. Monitoring for radon after installation of an appropriately designed cover is not required.

which shall provide reasonable assurance of control of radiological hazards to: (i) Be effective for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years, and (ii) limit releases of radon-222 from uranium byproduct materials, and radon-220 from thorium byproduct materials, to the atmosphere so as to not exceed an average[3] release rate of 20 picocuries per square meter per second (pCi/m²s). In computing required tailings cover thicknesses, moisture in soils in excess of amounts found normally in similar soils in similar circumstances shall not be considered. Direct gamma exposure from the tailings or wastes should be reduced to background levels. The effects of any thin synthetic layer shall not be taken into account in determining the calculated radon exhalation level. If non-soil materials are proposed as cover materials, it must be demonstrated that such materials will not crack or degrade by differential settlement, weathering, or other mechanism, over long-term time intervals.

Near surface cover materials (i.e., within the top three meters) shall not include waste or rock that contains elevated levels of radium; soils used for near surface cover must be essentially the same, as far as radioactivity is concerned, as that of surrounding surface soils. This is to ensure that surface radon exhalation is not significantly above background because of the cover material itself.

The design requirements in this criterion for longevity and control of radon releases shall apply to any portion of a licensed and/or disposal site unless such portion contains a concentration of radium in land, averaged over areas of 100 square meters, which, as a result of byproduct material does not exceed the background level by more than: (i) 5 picocuries per gram (pCi/g) of radium–226, or, in the case of thorium byproduct material, radium–228, averaged over the first 15 centimeters (cm) below the surface, and (ii) 15 pCi/g of radium–226, or, in the case of thorium byproduct material, radium–228, averaged over 15-cm thick layers more than 15 cm below the surface.

Criterion 7—At least one full year prior to any major site construction, a preoperational monitoring program shall be conducted to provide complete baseline data on a milling site and its environs. Throughout the construction and operating phases of the mill, an operational monitoring program shall be conducted to measure or evaluate compliance with applicable standards and regulations; to evaluate performance of control systems and procedures; to evaluate environmental impacts of operation; and to detect potential long-term effects.

Criterion 8—Milling operations shall be conducted so that all airborne effluent releases are reduced to levels as low as is reasonably achievable. The primary means of accomplishing this shall be by means of emission controls. Institutional controls, such as extending the site boundary and exclusion area, may be employed to ensure that offsite exposure limits are met, but only after all practicable measures have been taken to control emissions at the source. Notwithstanding the existence of individual dose standards, strict control of emissions is necessary to assure that population exposures are reduced to the maximum extent reasonably achievable and to avoid site contamination. The greatest potential sources of offsite radiation exposure (aside from radon exposure) are dusting from dry surfaces of the tailing disposal area not covered by tailings solution and emissions from yellowcake drying and packaging operations. During operations and prior to closure, radiation doses from radon emissions from surface impoundments of uranium or thorium byproduct materials shall be kept as low as is practicable.

Checks shall be made and logged hourly of all parameters (e.g., differential pressures and scrubber water flow rates) which determine the efficiency of yellowcake stack emission control equipment operation. It shall be determined whether or not conditions are within a range prescribed to ensure that the equipment is operating consistently near peak efficiency; corrective action shall be taken when performance is outside of prescribed ranges. Effluent control devices shall be operative at all times during drying and packaging operations and whenever air is exhausting from the yellowcake stack. Drying and packaging operations shall terminate when controls are inoperative. When checks indicate the equipment is not operating within the range prescribed for peak efficiency, actions shall be taken to restore parameters to the prescribed range. When this cannot be done without shutdown and repairs, drying and packaging operations shall cease as soon as practicable. Operations may not be re-started after cessation due to off-normal performance until needed corrective actions have been identified and implemented. All such cessations, corrective actions, and re-starts shall be reported to the appropriate NRC regional office as indicated in Criterion 8A, in writing, within 10 days of the subsequent restart.

To control dusting from tailings, that portion not covered by standing liquids shall be wetted or chemically stablized to prevent or minimize blowing and dusting to the maximum extent reasonably achievable. This requirement may be relaxed if tailings are effectively sheltered from wind, such as may be the case where they are disposed of below grade and the tailings surface is not exposed to wind. Consideration shall be given in planning tailings disposal programs to methods which would allow phased covering and reclamation of tailings impoundments since this will help in controlling particulate and radon emissions during operation. To control dusting from diffuse sources, such as tailings and ore pads where automatic controls do not apply, operators shall develop written operating procedures specifying the methods of control which will be utilized.

Milling operations producing or involving thorium byproduct material shall be conducted in such a manner as to provide reasonable assurance that the annual dose equivalent does not exceed 25 millirems to the whole body, 75 millirems to the thyriod, and 25 millirems to any other organ of any member of the public as a result of exposures to the planned discharge of radioactive materials, radon–220 and its daughters excepted, to the general environment.

Uranium and thorium byproduct materials shall be managed so as to conform to the applicable provisions of Title 40 of the Code of Federal Regulations, Part 440, "Ore Mining and Dressing Point Source Category: Effluent Limitations Guidelines and New Source Performance Standards, Subpart C, Uranium, Radium, and Vanadium Ores Subcategory," as codified on January 1, 1983.

Criteria 8A—Daily inspections of tailings or waste retention systems shall be conducted by a qualified engineer or scientist and documented. The appropriate NRC regional office as indicated in Appendix D of 10 CFR Part 20, or the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555, shall be immediately notified of any failure in a tailings or waste retention system which results in a release of tailings or waste into unrestricted areas, and/or of any unusual conditions (conditions not contemplated in the design of the retention system) which if not corrected could indicate the potential or lead to failure of the system and result in a release of tailings or waste into unrestricted areas.

II. Financial Criteria

Criterion 9—Financial surety arrangements shall be established by each mill operator prior to the commencement of operations to assure that sufficient funds will be available to carry out the decontamination and decommissioning of the mill and site and for the reclamation of any tailings or waste disposal areas. The amount of funds to be ensured by such surety arrangements shall be based on Commission-approved cost estimates in a Commission-approved plan for: (1) Decontamination and decommissioning of mill buildings and the milling site to levels which would allow unrestricted use of these areas upon decommissioning, and (2) the reclamation of tailings and/or waste disposal areas in accordance with technical criteria delineated in Section I of this Appendix. The licensee shall submit this plan in conjunction with an environmental report that addresses the expected environmental impacts of the milling operation, decommissioning and tailings reclamation, and evaluates alternatives for mitigating these impacts. The surety shall also cover the payment of the charge for long-term surveillance and control required by Criterion 10. In establishing specific surety arrangements, the licensee's cost estimates shall take into account total costs that would be incurred if an independent contractor were hired to perform the decommissioning and reclamation work. In order to avoid unnecessary duplication and expense, the Commission may accept financial sureties that have been consolidated with financial or surety arrangements established to meet requirements of other Federal or state agencies and/or local governing bodies for such decommissioning, decontamination, reclamation, and long-term site surveillance and control, provided such arrangements are considered adequate to satisfy these requirements and that the portion of the surety which covers the decommissioning and reclamation of the mill, mill tailings site

[3] This average shall apply to the entire surface of each disposal area over periods of at least 1 year, but short compared to 100 years. Radon will come from both uranium byproduct materials and from covering materials. Radon emissions from covering materials should be estimated as part of developing a closure plan for each site. The standard, however, applies only to emissions from uranium byproduct materials to the atmosphere.

and associated areas, and the long-term funding charge is clearly identified and committed for use in accomplishing these activities. The licensee's surety mechanism will be reviewed annually by the Commission to assure that sufficient funds would be available for completion of the reclamation plan if the work had to be performed by an independent contractor. The amount of surety liability should be adjusted to recognize any increases or decreases resulting from inflation, changes in engineering plans, activities performed, and any other conditions affecting costs. Regardless of whether reclamation is phased through the life of the operation or takes place at the end of operations, an appropriate portion of surety liability shall be retained until final compliance with the reclamation plan is determined. This will yield a surety that is at least sufficient at all times to cover the costs of decommissioning and reclamation of the areas that are expected to be disturbed before the next license renewal. The term of the surety mechanism must be open ended, unless it can be demonstrated that another arrangement would provide an equivalent level of assurance. This assurance could be provided with a surety instrument which is written for a specified period of time (e.g., 5 years) yet which must be automatically renewed unless the surety notifies the beneficiary (the Commission or the State regulatory agency) and the principal (the licensee) some reasonable time (e.g., 90 days) prior to the renewal date of their intention not to renew. In such a situation the surety requirement still exists and the licensee would be required to submit an acceptable replacement surety within a brief period of time to allow at least 60 days for the regulatory agency to collect.

Proof of forfeiture must not be necessary to collect the surety so that in the event that the licensee could not provide an acceptable replacement surety within the required time, the surety shall be automatically collected prior to its expiration. The conditions described above would have to be clearly stated on any surety instrument which is not open-ended, and must be agreed to by all parties. Financial surety arrangements generally acceptable to the Commission are:

(a) Surety bonds;
(b) Cash deposits;
(c) Certificates of deposit;
(d) Deposits of government securities;
(e) Irrevocable letters or lines of credit; and
(f) Combinations of the above or such other types of arrangements as may be approved by the Commission. However, self insurance, or any arrangement which essentially constitutes self insurance (e.g., a contract with a state or Federal agency), will not satisfy the surety requirement since this provides no additional assurance other than that which already exists through license requirements.

Criterion 10—A minimum charge of $250,000 (1978 dollars) to cover the costs of long-term surveillance shall be paid by each mill operator to the general treasury of the United States or to an appropriate State agency prior to the termination of a uranium or thorium mill license.

If site surveillance or control requirements at a particular site are determined, on the basis of a site-specific evaluation, to be significantly greater than those specified in Criterion 12 (e.g., if fencing is determined to be necessary), variance in funding requirements may be specified by the Commission. In any case, the total charge to cover the costs of long-term surveillance shall be such that, with an assumed 1 percent annual real interest rate, the collected funds will yield interest in an amount sufficient to cover the annual costs of site surveillance. The total charge will be adjusted annually prior to actual payment to recognize inflation. The inflation rate to be used is that indicated by the change in the Consumer Price Index published by the U.S. Department of Labor, Bureau of Labor Statistics.

III. Site and Byproduct Material Ownership

Criterion 11—

A. These criteria relating to ownership of tailings and their disposal sites become effective on November 8, 1981, and apply to all licenses terminated, issued, or renewed after that date.

B. Any uranium or thorium milling license or tailings license shall contain such terms and conditions as the Commission determines necessary to assure that prior to termination of the license, the licensee will comply with ownership requirements of this criterion for sites used for tailings disposal.

C. Title to the byproduct material licensed under this Part and land, including any interests therein (other than land owned by the United States or by a State) which is used for the disposal of any such byproduct material, or is essential to ensure the long term stability of such disposal site, shall be transferred to the United States or the State in which such land is located, at the option of such State. In view of the fact that physical isolation must be the primary means of long-term control, and Government land ownership is a desirable supplementary measure, ownership of certain severable subsurface interests (for example, mineral rights) may be determined to be unnecessary to protect the public health and safety and the environment. In any case, however, the applicant/operator must demonstrate a serious effort to obtain such subsurface rights, and must, in the event that certain rights cannot be obtained, provide notification in local public land records of the fact that the land is being used for the disposal of radioactive material and is subject to either an NRC general or specific license prohibiting the disruption and disturbance of the tailings. In some rare cases, such as may occur with deep burial where no ongoing site surveillance will be required, surface land ownership transfer requirements may be waived. For licenses issued before November 8, 1981, the Commission may take into account the status of the ownership of such land, and interests therein, and the ability of a licensee to transfer title and custody thereof to the United States or a State.

D. If the Commission subsequent to title transfer determines that use of the surface or subsurface estates, or both, of the land transferred to the United States or to a State will not endanger the public health, safety, welfare, or environment, the Commission may permit the use of the surface or subsurface estates, or both, of such land in a manner consistent with the provisions provided in these criteria. If the Commission permits such use of such land, it will provide the person who transferred such land with the right of first refusal with respect to such use of such land.

E. Material and land transferred to the United States or a State in accordance with this Criterion shall be transferred without cost to the United States or a State other than administrative and legal costs incurred in carrying out such transfer.

F. The provisions of this Part respecting transfer of title and custody to land and tailings and wastes shall not apply in the case of lands held in trust by the United States for any Indian tribe or lands owned by such Indian tribe subject to a restriction against alienation imposed by the United States. In the case of such lands which are used for the disposal of byproduct material, as defined in this Part, the licensee shall enter into arrangements with the Commission as may be appropriate to assure the long-term surveillance of such lands by the United States.

IV. Long-Term Site Surveillance

Criterion 12—The final disposition of tailings or wastes at milling sites should be such that ongoing active maintenance is not necessary to preserve isolation. As a minimum, annual site inspections shall be conducted by the government agency retaining ultimate custody of the site where tailings, or wastes are stored to confirm the integrity of the stabilized tailings or waste systems and to determine the need, if any, for maintenance and/or monitoring. Results of the inspection shall be reported to the Commission within 60 days following each inspection. The Commission may require more frequent site inspections if, on the basis of a site-specific evaluation, such a need appears necessary due to the features of a particular tailings or waste disposal system.

Dated at Washington, DC, this 20th day of November 1984.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

49 FR 46425
Published 11/26/84
Comment period expires 1/25/85.
Comment period extended to 3/1/85

10 CFR Part 40

Uranium Mill Tailings Regulations; Ground Water Protection and Other Issues

AGENCY: Nuclear Regulatory Commission.

ACTION: Advanced notice of proposed rulemaking.

SUMMARY: The Nuclear Regulatory Commission (NRC) is considering further amendments to its uranium mill tailings regulations. The future rulemaking proceeding for which this notice is issued is primarily intended to incorporate ground water protection provisions and other requirements established by the Environmental Protection Agency for similar hazardous wastes into NRC regulations. This action is necessary to make NRC requirements similar to EPA standards

as required by provisions of the Uranium Mill Tailings Radiation Control Act.

DATE: The comment period expires January 25, 1985. Comments received after this date will be considered if it is practical to do so but assurance of consideration may not be given except as to comments received on or before this date.

ADDRESSES: Mail comments to Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch, or deliver comments to Room 1121, 1717 H Street NW, Washington, DC between 8:15 a.m. and 5:00 p.m. weekdays.

FOR FURTHER INFORMATION CONTACT: Robert Fonner, Office of Executive Legal Director, telephone (301) 492–8692, or Kitty S. Dragonette, Division of Waste Management, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 427–4300.

SUPPLEMENTARY INFORMATION: The Nuclear Regulatory Commission has today proposed modifications to its existing mill tailings regulations in Appendix A to 10 CFR Part 40 for the purpose of conforming them to generally applicable standards promulgated by the Environmental Protection Agency (EPA) on September 30, 1983 (see 48 FR 45926; October 7, 1983). This advance notice of proposed rulemaking (ANPRM) announces that the Commission is considering proposing further modifications to its regulations in 10 CFR Part 40, to satisfy certain provisions of the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), and requests public comments on pertinent issues and questions.

On October 7, 1983, the EPA published generally applicable standards for the management of uranium and thorium byproduct material. The standards were developed by the EPA in a manner to satisfy the provisions of section 275 of the Atomic Energy Act, as amended, that for nonradiological hazards, the standards "* * * shall provide for the protection of human health and the environment consistent with the standards required under Subtitle C of the Solid Waste Disposal Act, as amended, which are applicable to such hazards." To achieve this goal the EPA included within its requirements published October 7, 1983, selected provisions from its regulations issued under the Solid Waste Disposal Act (SWDA) by cross referencing the SWDA provisions. These specific provisions are now in effect and the NRC is considering undertaking a rulemaking which would clarify its regulations by including within them those SWDA requirements selected by the EPA for application to uranium and thorium mill tailings.

The rulemaking under consideration would also be intended to satisfy a requirement placed upon the NRC under section 84 of the Atomic Energy Act of 1954, as amended, to "* * * insure that the management of any byproduct material * * * is carried out in such manner as conforms to general requirements established by the Commission, with the concurrence of the (EPA) Administrator, which are, to the maximum extent practicable, at least comparable to requirements applicable to the possession, transfer, and disposal of similar hazardous material regulated by the Administrator under the Solid Waste Disposal Act, as amended." The rulemaking under consideration, which is the primary subject of this ANPRM, would then incorporate within NRC regulations elements of EPA's SWDA requirements already imposed by EPA, and establish any further requirements necessary for the NRC to have SWDA-comparable standards as called for by Section 84 of the Atomic Energy Act of 1954, as amended.

The Commission considered further revisions to Appendix A to conform it to the physical stability aspects of the EPA standard, but did not propose them. The EPA standard requires that the final cover design provide reasonable assurance of effective control "for one thousand years, to the extent reasonably achievable, and in any case, for at least 200 years." The EPA's numerical longevity standard takes a different approach to stability than do the NRC requirements. In Appendix A, the NRC established numerous prescriptive requirements for specific design features in order to assure stability without active maintenance for an indefinite period of time following closure. The EPA rule sets a performance standard for a limited time period. In addition, the preamble to the EPA standard and the supporting environmental evaluation indicate that the EPA consciously considered the acceptability of relying on active maintenance to provide stability following closure, and did not prohibit it. Rather, the EPA standard requires that, for nonradiological hazards the need for active maintenance only be minimized. NRC's Appendix A flatly prohibits any planned reliance on active maintenance.

The Commission requests comments on whether it should delete or modify additional provisions of Appendix A including prescriptive requirements for specific design features which may not be necessary to meet the EPA standard. The prescriptive requirements in question include those for minimizing upstream drainage area, siting where there is good wind protection, relatively flat slopes, mandatory vegetative or rock cover, cobble size rock, high quality rock cover, and rock armoring. The Commission also considered deleting the prohibition on reliance on active maintenance, modifying Criterion 3 mandating below grade disposal as the prime option, and deleting the requirement for background radium concentrations in cover materials. Relief from these retained provisions is available through case-by-case proposals by licensees as noted in proposed additions to the Introduction of Appendix A of 10 CFR 40. The Commission seeks comment on whether this is sufficient flexibility in view of the Commission's intent to consider alternative proposals as routine licensing actions.

I. Background on the Ground Water Issue

The SWDA requirements imposed by the EPA in its rule published October 7, 1983 (48 FR 45926) were described by the EPA in that Notice as follows: "Consistent with the standards EPA issued under the SWDA for hazardous wastes (47 FR 32274–32388, July 26, 1982) the standard for tailings piles has two parts: (1) A 'primary' standard that requires use of a liner designed to prevent migration of hazardous substances out of the impoundment, and (2) a 'secondary' ground water protection standard requiring, in effect, that any hazardous constituents that leak from the waste not be allowed to degrade ground water. The primary standard applies to new portions of new or existing waste depositories. The secondary standard applies to new and existing portions, the point of compliance being at the edge of the waste impoundment. The specific hazardous substances and concentrations (i.e., background levels) that define noncompliance with the secondary standard at each site will be established for uranium mill tailings by NRC and Agreement States. The SWDA rules, however, permit alternate concentration limits to be established when they will not pose "* * *a substantial present or potential hazard to human health or the environment" as long as the alternate concentration limit is not exceeded. The rule also allow (sic) 'hazardous constituents' to be exempted from coverage by the permit based on the same criterion. EPA determines the alternate concentration standard or exemption under the SWDA; EPA's concurrence would be required under the proposed standards for tailings."

The EPA went on to further describe the primary standard, primarily consisting of the liner design requirements, and clarify the secondary standard, by saying:

"The primary standard, 40 CFR 264.221, can usually be satisfied only by using liner materials (such as plastics) that can retain all wastes. Exemptions permitting use of other liner materials (such as clay) that may release water or small quantities of other substances or, in some cases, permitting no liner may be granted only if migration of hazardous constituents into the ground water or surface water would be prevented indefinitely * * *."

"Under these standards, all new waste storage areas (whether new waste facilities or expansions of existing piles) are subject to the primary standard—the liner requirement. If new wastes are added to an existing pile, however, the pile must comply with the secondary standard—the hazardous constituent concentration standards for health and environmental protection. Whether for a new or existing pile, if the secondary standards are found not to be satisfied and subsequent corrective actions fail to achieve compliance in a reasonable time, the operator must cease depositing waste on that pile."

Also in its October 7, 1983 Notice, the EPA stated that "EPA's responsibilities to establish standards under section 206 of UMTRCA are carried out through adoption of all or part of the following sections of the SWDA regulations:

i. Subpart F:

40 CFR 264.92 Ground water protection standard
40 CFR 264.93 Hazardous constituents
40 CFR 264.94 Concentration limits
(These three sections are modified and adopted as § 192.32(a)(2))
40 CFR 264.100 Corrective action program
(This section is modified and adopted as § 192.33)

ii. Subpart G:

40 CFR 264.111 Closure performance standard
(This section is adopted as part of § 192.32(b)(1))

iii. Subpart K:

40 CFR 264.221 Design and operating requirements for surface impoundments
(This section is modified and adopted as § 192.32(a)(1))"

"NRC's responsibilities under UMTRCA are to implement EPA's standard and to '* * *insure that the management of any byproduct material * * * is carried out in such a manner as * * * conforms to general requirements established by the Commission, with the concurrence of the Administrator, which are, to the maximum extent practicable, at least comparable to requirements applicable to the possession, transfer, and disposal of similar hazardous material regulated by the Administrator under the SWDA, as amended.' EPA will insure that NRC's regulations satisfy these admonitions through its concurrence role. Relevant SWDA regulations are those embedded in Subparts A (except Section 264.3), B, C, D, E, F, G, H, and K. Examples of areas which NRC must address in discharging these responsibilities involve functions under the six sections listed immediately above which are incorporated into these EPA standards, and the following sections of the SWDA regulations:

i. Subpart F:

40 CFR 264.91 Required programs
40 CFR 264.95 Point of compliance
40 CFR 264.96 Compliance period
40 CFR 264.97 General ground water monitoring requirements
40 CFR 264.98 Detection monitoring program
40 CFR 264.99 Compliance monitoring program

ii. Subpart G:

40 CFR 264.117 Post-closure care and use of property

iii. Subpart K:

40 CFR 264.226 Monitoring and inspection (of impoundment liners), as applicable
40 CFR 264.228 Closure and postclosure care, as applicable."

The above quotations from the EPA's October 7, 1983 Notice serve to clarify the substance of EPA's standards, the respective agency responsibilities under the UMTRCA, and the nature and scope of the rulemaking the NRC is herein considering undertaking. The NRC has reviewed the language quoted and, with the exception of the jurisdictional concerns discussed in the following section, believes it to be factually correct and a fair representation of the issues addressed.

II. Commission Authority and Responsibility

Section 84c. of the Atomic Energy Act states that: A Licensee may propose alternatives to specific requirements adopted and enforced by the Commission under this act. Such alternative proposals may take into account local or regional conditions, including geology, topography, hydrology and meteorology. The Commission may treat such alternatives as satisfying Commission requirements if the Commission determines that such alternatives will achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety, and the environment from radiological and nonradiological hazards associated with such sites, which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by standards and requirements adopted and enforced by the Commission for the same purpose and any final standards promulgated by the Administrator of the Environmental Protection Agency in accordance with section 275.

The Commission historically has had the authority and responsibility to regulate the activities of persons licensed under the Atomic Energy Act of 1954, as amended. Consistent with that authority and in accordance with section 84c. of that Act, the Commission has the discretion to review and approve site specific alternatives to standards promulgated by the Commission and by the Administrator of the Environmental Protection Agency. In the exercise of this authority, section 84c. does not require the Commission to obtain the concurrence of the Administrator in any site specific alternative which satisfies Commission requirements for the level of protection for public health, safety, and the environment from radiological and nonradiological hazards at uranium mill tailings sites. As an example, the Commission need not seek concurrence of the Administrator in case-by-case determinations of alternative concentration limits and delisting of hazardous constituents for specific sites. It should be understood that the proposed conforming regulations deal with the exercise of the Commission's responsibility and authority under the Atomic Energy Act of 1954, solely as regards uranium mill tailings sites and have no broader connotation.

The Commission believes that licensee proposals for alternatives can be an important and effective way to help deal with the problems associated with implementing the new EPA standards. The Commission expects that it may require several years to have its conforming regulations fully in place. It expects to use the flexibility provided by section 84 in the interim to consider and approve alternative proposals from licensees. Section 84c. provides NRC sufficient authority to independently approve alternatives so long as the Commission can make the required determination.

III. Issues for Public Comments

The NRC requests public comment on the general question of how best to proceed to fulfill its responsibilities under the Atomic Energy Act, with respect to establishing SWDA-comparable requirements for the management of mill tailings, to the maximum extent practicable. In this context, comments are requested on choices and decisions the NRC must make concerning issues and actions that are within its discretion. Comments on the basic value, validity, lawfulness, or appropriateness of the EPA's SWDA regulations, the SWDA, or the UMTRCA are not requested.

A. Tentative NRC Approach for Ground Water Protection

The NRC has developed a tentative approach to place SWDA-comparable requirements in its regulations, based on planning and development efforts conducted to date. This approach is tentative, and is made a part of this public announcement so efforts spent in providing public comment might be better guided. It involves the development of additions to NRC regulations (either a block insert at the end of 10 CFR Part 40 or perhaps by creation of a new Part 41) which would contain the entire set of SWDA-comparable requirements.

The additions would be organized in terms of design, operating, closure, and post-closure requirements, and would to the fullest extent feasible, be a complete statement of the requirements without reference to EPA requirements in Title 40 of the Code of Federal Regulations. In this way, the requirements could be stated in a self-contained, unified manner in one place. Coverage would include at least the SWDA requirements already imposed by EPA (40 CFR 264.92–94, 264.100, 264.111, and 264.221), and appropriate portions of the SWDA requirements mentioned by the EPA explicitly as "examples of areas which NRC must address" (these include 40 CFR 264.95–99, 264.117, 264.228, and 264.228).

The rulemaking being considered for proposal by the NRC may include most of Subpart F (40 CFR 264.90–100), due to the close relationship and interdependency of the separate provisions, and because all but 40 CFR 264.90, "Applicability," is either imposed or mentioned as an example by the EPA.

The remainder of the EPA's SWDA regulations, including Subpart A (except § 264.3), B, C, D, E, F, G, H, and K would be reviewed in developing a proposal to determine which of those requirements would need to be incorporated in NRC regulations to establish NRC requirements which are to the maximum extent practicable, at least comparable to the EPA's SWDA requirements for similar hazardous material.

In developing this proposal the NRC would distinguish between substantive requirements and EPA's procedural permitting requirements because it does not believe the UMTRCA mandate requires the NRC to adopt any portion of the procedural permitting aspects of EPA's regulations. The NRC's established procedures for licensing, inspection, and enforcement would be used with respect to implementation.

B. Issues and Questions

The NRC seeks public input with respect to all aspects of the question of how best to fulfill its responsibilities under section 275 and 84 of the Atomic Energy Act of 1954, as amended, for protection of ground water. The NRC also seeks public comment with respect to the following issues and questions (In providing public comment, commenters are requested to provide the basis in fact for any opinions offered or assertions made):

(1) Should the SWDA-comparable requirements to be placed in NRC regulations be explicitly restated to precisely duplicate EPA's language, or should substantive requirements be paraphrased?

(2) Should all of Subpart F be included? What should not be included?

(3) What should be included in a listing of hazardous constituents for mill tailings to replace the 375-item long list in Appendix VIII to 40 CFR Part 261 referenced in 40 CFR 264.93? Should constituents not usually present or not present above trace levels be included? What criteria should be applied to decide what constituents should be included?

(4) The NRC must establish SWDA-comparable requirements to the maximum extent practicable. In this context, what is practicable given current practice and the current state of technology?

(5) Should NRC retain the basic sequence embodied in Subpart F where licensees who detect ground water contamination progress through a graduated scale of action, from detection monitoring, through compliance monitoring, and on to corrective action, with significant time delays allowed between steps while plans and programs are being developed, reviewed, and implemented? Would it be advisable, practicable or appropriate to require, for example, that all NRC licensees have approved compliance monitoring programs that are automatically activated and implemented when needed?

(6) Should the basic SWDA scheme for the timing and duration of a "compliance" period, a "closure" period, and a "post-closure care" period be maintained? What modifications, deletions, additions should be made?

(7) To what extent, how, and under what conditions should leak detection systems under single-liner impoundments be allowed to fulfill the requirements for a detection monitoring program that otherwise requires a monitoring well in the uppermost aquifer?

(8) How detailed should NRC's regulations be, and what should and should not be required in areas such as well construction, sampling and sample analysis, determinations of annual average and seasonal background concentrations, minimum detection levels, statistical treatment of data and determinations of statistically significant differences, recordkeeping and reporting, quality assurance, etc.?

(9) To what extent must the NRC provide supporting environmental impact analyses considering the nature of the requirements under consideration, some of which have already been imposed by EPA and are effective? If supporting enviromental evaluations are needed for SWDA-comparable rule changes except for the requirements already imposed by the EPA, should the NRC continue to proceed with only a single rulemaking to establish a complete set of SWDA-comparable requirements?

(10) Is the flexibility cited in the proposed addition to the Introduction of Appendix A 10 CFR Part 40 sufficient or should the NRC develop and support additional modifications to conform to the physical stability aspects of the EPA standard?

List of Subjects in 10 CFR Part 40

Government contracts, Hazardous material—transportation, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Source material, and Uranium.

Dated at Washington, DC, this 20th day of November 1984.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

50 FR 2293
Published 1/16/85
Comment period expires 2/10/85

10 CFR Part 40

Uranium Mill Tailing Regulations; Conforming NRC Requirements to EPA Standards

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule; extension of comment period.

SUMMARY: On November 26, 1984, (49 FR 46418), the NRC published for public comment a proposed rule amending its regulations governing the disposal of uranium mill tailings. The proposed changes are intended to conform existing NRC regulations to the regulations published by the Environmental Protection Agency. The comment period for this proposed rule was to have expired on January 10, 1985. A number of commenters have requested an extension of the comment period. In view of the importance of the proposed rule, and the desire of the Commission to allow all parties to fully express their views, the NRC has decided to extend the comment period

for an additional thirty days. The extended comment period now expires on February 10, 1985.

DATES: The comment period has been extended and now expires February 10, 1985. Comments received after this date will be considered if it is practical to do so but assurance of consideration cannot be given except as to comments received before this date.

ADDRESSES: Send written comments or suggestions to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Copies of comments received may be examined at the NRC Public Document Room, 1717 H Street NW. Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Robert Fonner, Office of the Executive Legal Director, on (301) 492–8692, or Kitty S. Dragonette Division of Waste Management on (301) 427–4300, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Dated at Washington, D.C., this 11th day of January, 1985.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

50 FR 2293
Published 1/16/85
Comment period expires 3/1/85

10 CFR Part 40

Uranium Mill Tailings Regulation; Ground Water Protection and Other Issues

AGENCY: Nuclear Regulatory Commission.

ACTION: Advanced notice of proposed rulemaking: extension of comment period.

SUMMARY: On November 26, 1984 (49 FR 46425), the NRC published for public comment an Advanced Notice of Proposed Rulemaking indicating that the NRC is considering further amendments to its uranium mill tailings regulations to incorporate ground water protection provisions and other requirements established by EPA for similar hazardous wastes into NRC regulations. The comment period for this proposed rule was to have expired January 25, 1985. A number of commenters have requested an extension of the comment period. In view of the importance of the proposed rule, and the desire of the Commission to allow all parties to fully express their views, the NRC has decided to extend the comment period. The extended comment now expires on March 1, 1985.

DATES: The comment period has been extended and now expires March 1, 1985. Comments received after this date will be considered if it is practical to do so but assurance of consideration cannot be given except as to comments received before this date.

ADDRESSES: Send written comments or suggestions to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Copies of comments received may be examined at the NRC Public Document Room, 1717 H Street NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Robert Fonner, Office of the Executive Legal Director, on (301) 492–8692, or Kitty S. Dragonette, Division of Waste Management on (301) 492–4300, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Dated at Washington D.C., this 11th day of January 1985.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

50 FR 5600
Published 2/11/85
Comment period expires 5/13/85

Decommissioning Criteria for Nuclear Facilities

See Part 30 Proposed Rule Making

50 FR 13797
Published 4/8/85
Comment period expires 7/8/85

Licenses and Radiation Safety Requirements for Well-Logging Operations

See Part 39 Proposed Rule Making

50 FR 19695
Published 5/10/85
Comment period expires 7/9/85

10 CFR Parts 40, 70, and 150

Material Balance Reports

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission proposes to amend its regulations concerning the submission of source material and special nuclear material inventory reports. The proposed rule would eliminate the requirement to report inventories on Form 742 for all licensees except those reporting under the US/IAEA Safeguards Agreement. The proposed rule would also eliminate the requirement to report inventories on Form 742C for all licensees except those for nuclear reactors and those reporting under the Agreement. The NRC would generate an equivalent report based on transaction data already submitted by each licensee. The proposed rule is intended to reduce the reporting burden on licensees without adversely affecting the domestic safeguards program or the ability to satisfy existing commitments.

DATE: Comment period expires July 9, 1985. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Mail written comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. Deliver comments to Room 1121, 1717 H Street, NW, Washington, DC between 8:15 am and 5:00 p.m. weekdays.

Copies of the regulatory analysis, the OMB supporting statement, and any comments received on the proposed rule may be examined at the NRC Public Document Room at 1717 H Street, NW, Washington, DC.

FOR FURTHER INFORMATION CONTACT: June Robertson, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone: (301) 427–4004.

SUPPLEMENTARY INFORMATION:

Background

As a part of a reevaluation of the safeguards data collection and processing requirements, the NRC examined the possibility of eliminating the requirements for licensees to report inventories on Forms 742 (Material Balance Report) and 742C (Physical Inventory Listing) for most licensees. The NRC concluded that, with the exception of those licensees reporting under the US/IAEA Safeguards Agreement, the requirements for reporting inventories on Material Balance Reports can be deleted. However, the need for a composition of ending inventory to be submitted on Form 742C by nuclear reactors is necessary to the domestic inspection and enforcement function. Therefore, the requirement for submitting Form 742C would be retained for nuclear reactor licensees.

Material Balance Reports

Currently, NRC licensees who are authorized to possess 350 grams or more of special nuclear material are required to submit an inventory report for each material type on Forms 742 and 742C as

of March 31 and September 30 of each year. Also, NRC and Agreement State licensees who are authorized to possess 1,000 kilograms or more of source material are required to submit a yearly statement of their source material holdings as of September 30 of each year. This information is necessary to the domestic inspection program and is needed to provide to the Australian and Canadian Governments a periodic report showing the inventory of all the materials in each U.S. facility that is subject to their respective Bilateral Agreements.

For licensees other than those reporting under the US/IAEA Safeguards Agreement, the proposed rule would eliminate the requirement to submit the Form 742. For all licensees other than nuclear reactors and those reporting under the US/IAEA Safeguards Agreement, the proposed rule would eliminate the requirement to submit the Form 742C. Instead, the NRC would computer-generate, for each licensee, an inventory report based on material transaction reports submitted to the NRC on Form 741 for special nuclear material and foreign origin source material. (In a separate rulemaking action effective July 16, 1984 (49 FR 24705; June 15, 1984), the requirement to report domestic transfers of U.S. origin source material was deleted. Only imports, exports, and domestic transfers of foreign origin source material are currently reported to the transaction data base.) This generated report would be submitted to the licensee for review and verification with the licensee's book inventory data or results of a physical inventory, as the case may be. The licensee would then submit any supplemental data necessary to reconcile any difference between the generated inventory and the licensee's inventory.

The amendment affects approximately 350 NRC and Agreement State licensees of which approximately 150 are small independent industrial manufacturers, each with an estimated annual gross income of less than $1 million and a staff of fewer than 500 people. As a result of this change, the reporting burden for each affected special nuclear material licensee would be reduced by two reports per year and the reporting burden for each affected source material licensee would be reduced by one statement per year. The process of the licensee verification of the computer-generated report will partially affect the reduction in licensee reporting, but the net burden to licensees should be less than the burden of generating and submitting the currently required reports.

Environmental Impact: Categorical Exclusion

The NRC has determined that the proposed amendments to Parts 40 and 70 are the type of action described in categorical exclusion 10 CFR 51.22(c)(3) and that the proposed amendment to Part 150 is the type of action described in 10 CFR 51.22(c)(1). Therefore, neither an environmental impact statement nor an environmental assessment has been prepared for this proposed regulation.

Paperwork Reduction Act Statement

This proposed rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). This rule has been submitted to the Office of Management and Budget for review and approval of the paperwork requirements.

Regulatory Analysis

The Commission has prepared a draft regulatory analysis on this proposed regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The draft analysis is available for inspection in the NRC Public Document Room, 1717 H Street, NW, Washington, DC. Single copies of the draft analysis may be obtained from June Robertson, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone: (301) 427–4004.

The Commission requests public comment on the draft regulatory analysis. Comments on the draft analysis may be submitted as indicated under the ADDRESSES heading.

Regulatory Flexibility Certification

Based upon the information available at this stage of the rulemaking proceeding and in accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that, if promulgated, this rule will not have a significant economic impact upon a substantial number of small entities due to the decrease in burden for all affected licensees. The proposed rule would reduce from 350 to 250 the number of specific licensees who are required to report inventories of nuclear materials under 10 CFR 40.64, 70.53, and 150.17. Currently, approximately 190 of these licensees submit 2 reports each year to report inventories of special nuclear materials. The remaining 60 licensees submit one report each year to report holdings of source material. The economic impact on all licensees will be reduced due to the fact that approximately 100 small licensees who currently complete a report(s) will not report inventories at all, and the remaining licensees will verify and update a Commission generated statement of inventory instead of completing a report. The current burden of two hours is time needed to complete the report. The estimated time for verifying and updating the Commission generated statement of inventory is one hour.

The approximately 100 licensees who need not complete and submit an inventory report are small independent industrial licensees who currently submit one report each year. This is a reduction of 2 hrs × 100) 200 hours each year. The licensees who will verify and update a Commission generated statement of inventory consists of approximately 150 small licensees and approximately 50 other licensees.

The average small independent industrial licensee has an annual gross income of less than $1 million and employs fewer than 500 people. The cost of complying with the proposed requirement will not pose an economic impact. There will be no additional cost for any licensee.

Any small entity subject to this regulation which determines that, because of its size, it is likely to bear a disproportionate adverse economic impact should notify the Commission of this in a comment that indicates:

(a) The licensee's size in terms of annual income, revenue, or number of employees;

(b) How the proposed regulation would result in a significant economic burden upon the licensee as compared to that placed upon a larger licensee; and

(c) How the proposed regulations could be modified to take into account the licensee's differing needs or capabilities.

List of Subjects

10 CFR Part 40

Governmental contracts, Hazardous materials—transportation, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Source material, Uranium.

10 CFR Part 70

Hazardous materials—transportation, Nuclear materials, Packaging and containers, Penalty, Radiation protection, Reporting and recordkeeping requirements, Scientific equipment, Security measures, Special nuclear material.

10 CFR Part 150

Hazardous materials—transportation, Intergovernmental relations, Nuclear

materials, Penalty, Reporting and recordkeeping requirements, Security measures, Source material, Special nuclear material.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is proposing to adopt the following amendments to 10 CFR Parts 40, 70, and 150.

PART 40—DOMESTIC LICENSING OF SOURCE MATERIAL

1. The authority citation for Part 40 continues to read as follows:

Authority: Secs. 62, 63, 64, 65, 81, 161, 182, 183, 186, 68 Stat. 932, 933, 935, 948, 953, 954, 955, as amended, secs. 11e(2), 83, 84, Pub. L. 95–604, 92 Stat. 3033, as amended, 3039, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2014(e)(2), 2092, 2093, 2094, 2095, 2111, 2113, 2114, 2201, 2232, 2233, 2236, 2282); secs. 274, Pub. L. 86–373, 73 Stat. 688 (42 U.S.C. 2021); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Section 40.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 40.31(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 40.46 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 40.71 also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); §§ 40.3, 40.25(d)(1)–(3), 40.35(a)–(d), 40.41 (b) and (c), 40.46, 40.51 (a) and (c), and 40.63 are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); and §§ 40.25 (c) and (d)(3) and (4), 40.26(c)(2), 40.35(e), 40.42, 40.61, 40.62, 40.64 and 40.65 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. In § 40.64, paragraph (b) is revised to read as follows:

§ 40.64 Reports.

* * * * *

(b) Except as specified in paragraphs (d) and (e) of this section, each licensee who is authorized to posses at any one time and location more than 1,000 kilograms of uranium or thorium or any combination of uranium or thorium, shall verify and update a statement of material balance concerning source material of foreign origin received, possessed, transferred, consumed, disposed of, or lost by the licensee. The Commission shall generate the statement as of September 30 of each year and mail it to the licensee by October 15 of each year. The licensee shall verify and update the statement and, if any change is necessary, submit a statement indicating the necessary changes to the Commission by October 31. The Commission may permit a licensee to extend the time to submit an updated statement when good cause is shown.

* * * * *

PART 70—DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

3. The authority citation for Part 70 is revised to read as follows:

Authority: Sections, 51, 53, 161, 182, 183, 68 Stat. 929, 930, 948, 953, 954, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2071, 2073, 2201, 2232, 2233, 2282); secs. 201, as amended, 202, 204, 206, 88 Stat. 1242, as amended, 1244, 1245, 1246 (42 U.S.C. 5841, 5842, 5845, 5846).

Section 70.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 70.21(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 70.31 also issued under sec. 57d, Pub. L. 93–377, 88 Stat. 475 (42 U.S.C. 2077). Sections 70.36 and 70.44 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 70.61 also issued under secs. 186, 187, 68 Stat. 955 (42 U.S.C. 2236, 2237). Section 70.62 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138).

For the purposes of sec. 233, 68 Stat. 958, as amended (42 U.S.C. 2273); §§ 70.3, 70.19(c), 70.21(c), 70.22(a), (b), (d)–(k), 70.24(a) and (b), 70.32(a)(3), (5), (6), (d), and (i), 70.36, 70.39(b) and (c), 70.41(a), 70.42(a) and (c), 70.56, 70.57(b), (c), and (d), 70.58(a)–(g)(3), and (h)–(j) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 70.7, 70.20a(a) and (d), 70.20b(c) and (e), 70.21(c), 70.24(b), 70.32(a)(6), (c), (d), (e), and (g), 70.36, 70.51(c)–(g), 70.56, 70.57(b) and (d) and 70.58(a)–(g)(3) and (h)–(j) are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 70.20b(d) and (e), 70.38, 70.51(b) and (i), 70.52, 70.53, 70.54, 70.55, 70.58(g)(4), (k), and (l), 70.59, and 70.60(b) and (c) are issued sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

4. In § 70.53, paragraph (a)(1) is revised to read as follows:

§ 70.53 Material status reports.

(a)(1) Each licensee who is authorized to possess at any one time and location special nuclear material in a quantity totaling more than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, shall verify and update a statement of material balance concerning special nuclear material received, produced, possessed, transferred, consumed, disposed of, or lost by the licensee. The Commission shall generate the statement as of March 31 and September 30 of each year and mail it to the licensee by April 15 and October 15. The licensee shall verify and update the statement and, if any change is necessary, submit a statement indicating the necessary changes to the Commission by April 30 and October 31. Persons licensed to operate nuclear reactors shall continue to prepare (on DOE/NRC Form 742C, Physical Inventory Listing) a statement of the composition of the ending inventory as of March 31 and September 30 of each year and file within thirty (30) days after the end of the period covered by the report. The Commission may permit a licensee to extend the time to submit an updated statement when good cause is shown.

* * * * *

PART 150—EXEMPTIONS AND CONTINUED REGULATORY AUTHORITY IN AGREEMENT STATES AND IN OFFSHORE WATERS UNDER SECTION 274

5. The authority citation for Part 150 continues to read as follows:

Authority: Section 161, 68 Stat. 948, as amended, sec. 274, 73 Stat. 688 (42 U.S.C. 2201, 2021); sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841).

Sections 150.3, 150.15, 150.15a, 150.31, 150.32 also issued under secs. 11e (2), 81, 68 Stat. 923, 935, as amended, secs. 83, 84, 92 Stat. 3033, 3039 (42 U.S.C. 2014e(2), 2111, 2113, 2114). Section 150.14 also issued sec. 53, 68 Stat. 930, as amended (42 U.S.C. 2073). Section 150.17a also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 150.30 also issued under sec. 234, 83 Stat. 4444 (42 U.S.C. 2282).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273): §§ 150.20(b)(2)–(4) and 150.21 are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §150.14 is issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 150.16–150.19 and 150.20(b)(1) are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

6. In § 150.17, paragraph (b) is revised to read as follows:

§ 150.17 Submission to the Commission of source material reports.

(b) Except as specified in paragraph (d) of this section and § 150.17a, each person who is authorized to possess at any one time and location, pursuant to an Agreement State license, more than 1,000 kilograms of uranium or thorium, or any combination of uranium or thorium, shall verify and update a statement of material balance concerning source material of foreign origin received, possessed, tansferred, consumed, disposed of, or lost by the licensee. The Commission shall generate the statement as of September 30 of each year and mail it to the licensee by October 15. The licensee shall verify and update the statement and, if any change is necessary, submit a statement indicating the necessary changes to the Commission by October 31. The

Commission may permit a licensee to extend the time to submit an updated statement when good cause is shown.

* * * * *

Dated at Bethesda, Maryland, this 22d day of April, 1985.

For the Nuclear Regulatory Commission.

William J. Dircks,

Executive Director for Operations.

50 FR 23025
Published 5/30/85
Extended comment period expires 7/12/85.

Decommissioning Criteria for Nuclear Facilities; Extension of Comment Period

See Part 30 Proposed Rule Making

≫ **50 FR 23960**
Published 6/7/85
Comment period expires 10/7/85.

Financial Responsibility Requirements Applicable to NRC Licensees for Cleanup of Accidental and Unexpected Releases of Radioactive Materials

See Part 30 Proposed Rulemaking

≫ **50 FR 30616**
Published 7/26/85
Comment period expires 11/18/85

Medical Use of Byproduct Material

See Part 30 Proposed Rule Making

PART 40

DOMESTIC LICENSING OF SOURCE MATERIAL

PETITIONS FOR RULE MAKING

46 FR 14021
Published 2/25/81

≫ Amended 48 FR 19722

10 CFR Part 40

[Docket No. PRM-40-23]

Sierra Club; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Publication of Petition for Rulemaking from Sierra Club.

SUMMARY: The Nuclear Regulatory Commission is publishing for public comment a petition for rulemaking filed before the Commission on December 5, 1980, by the Sierra Club. The petition, which has been assigned Docket No. PRM-40-23, requests that the Commission amend its regulation, 10 CFR Part 40, to license the possession of uranium mill tailings at inactive storage sites.

DATE: Comment period expires April 27, 1981.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, D.C. 20555.

All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: J. M. Felton, Director, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: 301-492-7211.

SUPPLEMENTARY INFORMATION: The petitioner states "* * * the Commission violated section 81 of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2111, in that it exempted * * * [uranium mill tailings and inactive storage sites] * * * from licensing as byproduct material without making the express findings required by section 81 that such exemption will not constitute an unreasonable risk * * * to the health and safety of the public." Also, the petitioner states that "* * * such classes or sites of byproduct materials do imperil public health and safety and, accordingly, that no exemption therefor can be justified under the Atomic Energy Act."

The petitioner requests that the Commission grant relief as follows:

(1) The Commission should repeal the purported licensing exemption for the 'inactive' uranium mill tailings sites which are subject to the remedial program of the Department of Energy under the Uranium Mill Tailings Radiation Control Act of 1978, Pub. L. 95-604. This exemption is set forth in the amendments to 10 CFR 40 promulgated by the Commission in 45 FR 65521 (October 3, 1980). This repeal could be accomplished by (a) deleting the last sentence of § 40.1(a) of such regulations; (b) deleting subparagraph (a) of § 40.21; and (c) revising subparagraph (b) of § 40.2a to provide that the Commission will require a license for possession of byproduct material that is located at a site where milling operations are no longer active.

(2) The Commission should further amend section 40.2a of such regulations to provide that the Commission will require a license for possession of byproduct material located on any other real property or improvement thereon which is in the vicinity of the 'inactive' mill tailings sites referred to in (1) above, where such byproduct materials on those vicinity property have been derived from such sites.

(3) Alternatively, the Commission should conduct a rulemaking to determine whether a licensing exemption of such sites or classes of byproduct material, referred to above, will "constitute an unreasonable risk to the health and safety of the public."

Dated at Washington, D.C., this 19th day of February 1981.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

47 FR 53889
Published 11/30/82

Comment period extended to 5/2/83
48 FR 8085

10 CFR Part 40

[Docket No. PRM-40-24]

Union Carbide Corp.; Receipt of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Petition for rulemaking.

SUMMARY: The Nuclear Regulatory Commission is publishing for public comment a notice of receipt of a petition for rulemaking submitted by the Union Carbide Corporation. The petitioner requests that the NRC amend portions of its regulations setting out criteria for the operation of uranium mills and the disposition of tailings or waste resulting from uranium milling activities. The petitioner supports the suggested amendments with information it says was not available to the NRC at the time the regulations were issued. The petitioner believes that its suggested changes would continue to protect adequately public health, safety, and the environment while significantly reducing the compliance costs incurred by the petitioner in the operation of its uranium milling facilities.

DATE: Submit comments by January 31, 1983. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Submit comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Services Branch.

Hand deliver comments to: Room 1121, 1717 H Street, NW., Washington, DC, between 8:15 a.m. and 5:00 p.m.

For a copy of the petition write: The Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

Inspect and copy comments received on the petition at: The NRC Public Document Room, 1717 H Street, NW, Washington, DC.

FOR FURTHER INFORMATION CONTACT: John Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492-7086.

SUPPLEMENTARY INFORMATION: The Nuclear Regulatory Commission has received a petition for rulemaking from the Union Carbide Corporation. This petition has been assigned Docket No. PRM-40-24.

The Petitioner

The petitioner, Union Carbide Corporation, is a New York-based corporation engaged in uranium exploration, milling, and mining. The petitioner operates a uranium and vanadium milling facility at Uravan, Colorado and uranium milling facilities in Maybell, Colo., and Gas Hills, Wyo.

Colorado is an Agreement State under section 274 of the Atomic Energy Act. An amendment to the agreement between the NRC and the State of Colorado on May 10, 1982, gave the Colorado Department of Health the authority to license the possession of source and byproduct material attendant to uranium milling activities. The State of Colorado adopted standards that meet the minimum standards set out in Appendix A to Part 40 of NRC's regulations. Thus, the petitioner says, its Colorado facilities must comply, at a minimum, with the requirements set out in NRC's regulations even though the State of Colorado is the licensing authority.

Wyoming is not an Agreement State. Therefore, NRC remains the licensing and regulatory authority for source and byproduct material in Wyoming. As a result, NRC directly imposes the requirements of Appendix A to Part 40 on the petitioner's Wyoming facility.

The Suggested Amendments: Background

The petitioner requests specific amendments to Criteria 1, 5, 6, and 10 of Appendix A to Part 40. This appendix sets out the technical, financial, ownership, and long-term site surveillance criteria relating to the siting, operation, decontamination, decommissioning, and reclamation of uranium mills and the tailings or waste systems and sites at which uranium mills and systems are located. Appendix A was issued as part of the NRC's regulations implementing the Uranium Mill Tailings Radiation Control Act of 1978 (Pub. L. 95-604, 42 U.S.C. 7901, et seq.). These regulations were published in the Federal Register on October 3, 1980 (45 FR 65531).

The petitioner presents the suggested amendments to Criteria 1, 5, 6, and 10 of Appendix A to Part 40 on the basis of information which it says was not available to the NRC at the time the original regulations were issued. This supporting material, which is technical in nature, and comprises almost 400 pages, has been included by the petitioner in the petition for rulemaking.

The petitioner believes that the suggested amendments will continue to protect adequately the public health, safety, and the environment from radiation hazards associated with uranium milling. In addition, the petitioner asserts that its suggested amendments are more cost effective, in that they would significantly reduce the costs of compliance at the facilities covered by the regulations.

The Suggested Amendments: Criterion 1

Criterion 1 covers the selection of new tailings disposal sites or the adequacy of existing tailings disposal sites. The petitioner suggests that the long-term isolation of tailings and associated contaminants be defined as a 100-200 year period rather than the current "thousands of years" period. To accomplish this change, the petitioner would revise the introductory text of Criterion 1 to read as follows:

> In selecting among alternative tailings disposal sites or judging the adequacy of existing tailings sites, the following site features, which will determine the extent to which a program meets the broad objective of isolating the tailings and associated contaminants from man and the environment during operations and for 100-200 years thereafter without ongoing active maintenance, shall be evaluated. . .

The petitioner bases this suggestion on testimony before the NRC, the states of Colorado and New Mexico, the Environmental Protection Agency, and the Military Nuclear Systems Subcommittee of the Committee on the Armed Services. The petitioner contends that this testimony indicates that:

1. The thousands of years period is unreasonable.
2. Technology does not exist to assure the isolation of tailings for thousands of years.
3. The present requirement is costly and speculative.
4. It is difficult, if not impossible, to design a reclamation plan for a tailings pile that will withstand erosion over a period of thousands of years.
5. Tailings disposal should be based on a realistic period of time, such as 100-200 years.
6. The thousands of years requirements tends to relieve the government of any responsibility for ultimate control (Criterion 11).
7. The funds for long-term surveillance and control will be available to pay for any repair necessitated by damages resulting from any unexpected event (Criterion 10).

The Suggested Amendments: Criterion 5

Criterion 5 covers the seepage of toxic materials into the groundwater. The peititioner requests that this criterion be amended by removing the following sentences:

> Where groundwater impacts are occurring at an existing site due to deepage, action shall be taken to alleviate conditions that lead to excessive seepage impacts and restore groundwater quality to its potential use before milling operations began to the maximum extent practicable. The specific seepage control and groundwater protection method, or combination of methods, to be used must be worked out on a site-specific basis.

In their place the petitioner would substitute the following language:

> Where excessive groundwater contamination that may cause present and future harm due to human health and the environment is occurring at an existing site due to seepage of radioisotopes and other toxic materials into groundwater, corrective action shall be taken to clean up groundwater and alleviate conditions that may lead to such contamination to the maximum extent practicable. The specific seepage control and groundwater protection method or combination of methods to be used shall be worked out on a site-specific basis. In evaluating the method(s) to be used, consideration should be given to the current use of the groundwater, naturally-occurring characteristics of the groundwater, potential use of the groundwater based on needs of the community, size of the aquifer, and availability of other drinking water sources, and the practicability of restoration. In determining potential use of groundwater, any applicable state aquifer designation, water quality standard or water quality criteria shall be considered.

The petitioner contends that Criterion 5, as written, distinguishes new from existing sites. For new sites, the petitioner states that seepage may not result in deterioration of groundwater supplies, and technical alternatives are provided to assure that deterioration does not occur. The petitioner states that Criterion 5 currently requires that for existing sites, if groundwater quality is affected, groundwater quality must be restored. The petitioner asserts that no guidance is given concerning the standards to be used in developing the required site-specific seepage control and groundwater protection methods.

The petitioner's proposed language is intended to provide guidance it believes is missing for existing sites.

The Suggested Amendments: Criterion 6

Criterion 6 concerns the earth cover to be placed over tailings or wastes to prevent the surface exhalation of radon. This criterion currently requires a three-meter cover over tailings or wastes to result in a calculated reduction in surface exhalation of radon emanating from the tailings or wastes to less than two picocuries per square meter per second. Criterion 6 currently reads as follows:

Criterion 6—Sufficient earth cover, but not less than three meters, shall be placed over tailings or wastes at the end of milling operations to result in a calculated reduction in the surface exhalation of radon emanating from the tailings or wastes to less than two picocuries per square meter per second. In computing required tailings cover thicknesses, moisture in soils in excess of amounts normally found in similar soils in similar circumstances shall not be considered. Direct gamma exposure from the tailings or wastes should be reduced to background levels. The effects of any thin synthetic layer shall not be taken into account in determining the calculated radon exhalation level. If non-soiled materials are proposed to reduce tailings covers to less than three meters, it must be demonstrated that such materials will not crack or degrade by differential settlement, weathering, or other mechanism, over long-term time intervals. Near surface cover materials (i.e., within the top three meters) shall not include mine waste or rock that contains elevated levels of radium; soils used for near surface cover must be essentially the same, as far as radioactivity is concerned, as that of surrounding surface soils. This is to ensure that surface radon exhalation is not significantly above background because of the cover material itself.

The petitioner requests that Criterion 6 be revised so that remedial actions are cost-effective and based on a realistic assessment of the health hazard to the public that uranium mill tailings may pose. The petitioner believes that its proposal will ensure that mill tailings are controlled in a safe manner and that people and the environment will be protected from radiation hazards associated with tailings disposal. The petitioner's suggested revision of Criterion 6 reads as follows:

This criterion addresses tailings cover requirements and radiation control. Earth cover shall be placed over tailings or waste at the end of milling operations to prevent erosion over 100–200 years. A site-specific geo-technical evaluation shall be made to determine cover design requirements. The evaluation shall take into consideration climatic conditions and surface hydrology. The cover shall be designed to result in a calculated reduction in radon emanation from the covered tailings or waste areas to assure that concentrations of radon and other radioactive material concentrations beyond a small buffer zone of approximately 500 feet established around covered areas do not exceed limits specified in Appendix B, Table II of 10 CFR Part 20, excluding background. Habitable structures within the buffer zone shall be prohibited. If non-soil materials are proposed to be used for cover material, it must be demonstrated that such materials will not crack or degrade by differential settlement, weathering or other mechanism over 100–200 years

The petitioner says the suggested revision to Criterion 6 contains the following specific changes:

1. The radon flux standard is deleted. The petitioner claims that radon flux from tailing piles has no direct health-related significance, and that the primary health concern is radon daughter concentrations in inhabited buildings near tailings sites. The petitioner contends that a cover designed according to the requirements in its proposal will reduce the radon emanation rate and, as a result, the potential for radon daughter build-up. The petitioner also claims that the added buffer zone would provide additional protection.

2. Beyond the buffer zone, the concentration limits for radon and other radioactive materials would be as specified in Table II of Appendix B to 10 CFR Part 20. The petitioner contends that these limits should be the standards that a site-specific cover design must meet as they have been recognized by the NRC as the standards which protect against potential radiation hazards resulting from licensed activities.

3. The requirement that direct gamma exposure from tailings or wastes be reduced to background levels is deleted. The petitioner asserts that external gamma radiation originates almost entirely from the outer one foot of tailings and will be easily shielded by an earth cover designed in accordance with its proposal.

4. The prohibition on the use of mine waste or rock that contains elevated levels of radium in the earth cover is also excluded. The petitioner claims that, if the suggested changes are accepted, the material to be used as cover will be among the many considerations evaluated in determining cover design requirements.

In support of the suggested amendments, the petitioner contends that the current Criterion 6 is based on perceived risks to the public from exposure to mill tailings. The petitioner points to the DOE Commingled Tailings Study, testimony before Congress, and comments to the EPA indicating that health risks to the public from exposure to radium and radon from uranium mill tailings should be compared with risks from exposure to other natural sorces of radium, radon, and their daughters as well as to other risks commonly accepted by the public. The petitioner contends that, if such comparisons are made, it is clear that the health risks to the public associated with uranium mill tailings have been greatly overestimated.

The Suggested Amendments: Criterion 10

This criterion imposes a charge on each mill operator to cover the cost of long-term surveillance. The total charge must be such that, "with an assumed 1 percent annual real interest rate, the collected funds will yield interest in an amount sufficient to cover the annual costs of site surveillance." The petitioner proposes the use of a 2 percent interest rate rather than the current 1 percent interest rate. The petitioner requests that this rate, which it considers to be a more accurate percentage spread between inflation and interest rates, be used.

The Suggested Amendment: Additional Supporting Information

The petitioner cites information it says was not available to the NRC at the time the regulations were issued to support its suggested changes. This information includes public comment solicited as part of the rulemaking procedures used by the states of Colorado and New Mexico so that they could adopt regulations compatible with NRC's requirements. Additionally, it says more recent comments on mill tailings regulations have been presented to the EPA in response to its proposed standard for inactive uranium processing sites. A House Subcommittee focused on testimony on NRC's mill tailings regulations in 1981 and most recently in August 1982 after completion by DOE of its report on the clean-up and cost of commingled tailings sites.

The petitioner believes that the Final Generic Environmental Impact Statement on Uranium Milling (Final GEIS), NUREG–0706, is flawed. The petitioner claims that estimates on the number of uranium mills and the amount of mill tailings generated through the year 2000 are inaccurate. DOE projections on the increased nuclear generating capacity by the year 2000 have been revised downward from the mid-range of 180 gigawatts used in the Final GEIS to a low range of 145 and a high range of 185 estimated in March 1982. The petitioner believes that the low range projection by DOE is more

accurate than the mid-range used by NRC in its Final GEIS. As a result, the petitioner claims that the estimated amount of uranium needed that was presented in the Final GEIS is almost 1.8 times greater than present assessments indicate. Thus, the petitioner reasons that the amount of mill tailings and the health effects attributable to those mill tailings are also overestimated.

The petitioner claims that the Final GEIS fails to use the best available information on dose-response models, risk estimates, and carcinogenic co-factors to calculate the benefits of radon emission controls, and ignores the observed distribution of radon. The petitioner also states that the cost estimates used in the Final GEIS are inaccurate.

Finally, the petitioner claims that the language of the criteria in Appendix A to Part 40 does not provide the site-specific flexibility promised in the introductory paragraph of the Appendix.

Invitation to Comment

The Commission would like to receive public comment on the specific items addressed in PRM-40-24. Because of the complexity of the issues raised and the large amount of supporting material (approximately 400 pages) submitted by the petitioner, the Commission urges prospective commenters to obtain a complete copy of the petition. While copies of the petition last, they may be obtained without charge by writing the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Thereafter, they may be inspected or copied at a cost of five cents per page at the NRC Public Document Room at the location listed above.

Dated at Washington, D.C., this 23rd day of November 1982.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

48 FR 8085
Published 2/25/83
Comment period extended to 5/2/83

10 CFR Part 40

[Docket No. PRM-40-24]

Union Carbide Corp.; Petition for Rulemaking; Extension of Comment Period

AGENCY: Nuclear Regulatory Commission.

ACTION: Petition for rulemaking: Extension of comment period.

SUMMARY: On November 30, 1982, the NRC published a notice of receipt of a petition for rulemaking filed by the Union Carbide Corporation (47 FR 53889). The petition requested that the NRC amend portions of its regulations setting out criteria for the operation of uranium mills and the disposition of tailings or wastes resulting from uranium milling activities. The notice of receipt requested public comment on the petition and established a comment closing date of January 31, 1983. Several interested parties have requested that NRC extend the comment period on PRM-40-24 for varying lengths of time. Because of the length and complexity of the petition, NRC has agreed to extend the comment period for 90 days from the original comment closing date.

DATE: The comment period for PRM-40-24 is extended from January 31, 1933 to May 2, 1983.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, DC. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: John Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: 301-492-7086 or Toll Free: 800-368-5642.

Dated at Washington, D.C., this 17th day of February 1983.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

≫48 FR 19722
Published 5/2/83

10 CFR Part 40

[Docket No. PRM-40-25]

Sierra Club; Receipt of an Amendment to a Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Petition for rulemaking: amendment.

SUMMARY: The Nuclear Regulatory Commission is publishing for public comment a notice of receipt of an amendment to a petition for rulemaking submitted by the Sierra Club. The petitioner, in both the original petition and in this amendment to that petition, requests that the NRC amend its regulations to license the possession of uranium mill tailings at inactive storage sites or take other regulatory action to protect the public health and safety and the environment from the radiological and nonradiological hazards associated with the tailings. The petitioner believes that this action is necessary if NRC is to adequately fulfill its statutory responsibilities.

DATE: Submit comments by June 30, 1983. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Submit comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

Hand deliver comments to Room 1121, 1717 H Street, NW., Washington, DC between 8:15 am and 5:00 pm.

For a copy of the amendment to the petition write: Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

Inspect and copy comments received on the amendment to the petition at: The NRC Public Document Room, 1717 H Street NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: John Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492-7086 or call toll free (800) 368-5642.

SUPPLEMENTARY INFORMATION: The Nuclear Regulatory Commission has received an amendment to a petition for rulemaking from the Sierra Club. This amendment to the petition for rulemaking is assigned to the same

docket as the original petition for rulemaking (Docket No. PRM–40–23).

On February 25, 1981 (46 FR 14021) the NRC published a notice of receipt of a petition from the Sierra Club. The petitioner requested that the NRC amend its regulations to license the possession of uranium mill tailings at inactive storage sites. The petitioner proposed that the NRC take the following regulatory action to ensure that public health and safety and the environment is adequately protected from the hazards associated with uranium mill tailings.

1. Repeal the licensing exemption for inactive mill tailings sites subject to the Department of Energy's remedial program.

2. Require a license for the possession of byproduct material on any other property in the vicinity of an inactive mill tailings site if the byproduct materials are derived from the inactive mill tailings site.

3. Or alternatively, conduct a rulemaking to determine whether a licensing exemption of these sites or the byproduct material derived from the sites constitutes an unreasonable risk to public health and safety.

On March 21, 1983, the Sierra Club filed an amendment to its earlier petition. In this amendment to the petition, the petitioner requests that, in the event the NRC denies the petitioner's earlier request that NRC repeal the licensing exemption for inactive sites or conduct the requested rulemaking, the NRC take further action. Specifically, the petitioner requests that the NRC ensure that the management of byproduct material located on or derived from inactive uranium processing sites is conducted in a manner that protects the public health and safety and the environment from the radiological and nonradiological hazards associated with uranium mill tailings.

Whether the original petition is granted or not, the petitioner also requests that the NRC establish requirements to govern the management of byproduct material, not subject to licensing under section 81 of the Atomic Energy Act (42 U.S.C. 2111), comparable to the requirements applicable to similar materials under the Solid Waste Disposal Act, as amended (42 U.S.C. 6901 et seq.). In the alternative, the petitioner suggests that NRC extend the coverage of the requirements in 10 CFR Part 40, Appendix A, which are now applicable only to licensed byproduct material, to byproduct material not subject to licensing. In addition, the petitioner requests that NRC issue regulations that would require a person exempt from licensing to conduct monitoring activities, perform remedial work, or take any other action necessary to protect health and safety and the enviroment.

The petitioner stresses that, by filing this amendment to the earlier petition for rulemaking, it has not abandoned the original petition and the legal claims set forth in it. The petitioner, by this amendment to the petition, also seeks an expedited decision on the matters presented in the original petition and this amendment to it.

PRM–40–23 is but one of several issues currently before the NRC concerning the uranium mill tailings regulations. These regulations may also be affected by potential court action, certain legislative requirements directed toward the NRC and other government agencies with jurisdiction in this area, and another petition for rulemaking. The NRC is currently reassessing its uranium mill tailings regulations to determine the changes that may be necessary to satisfy its legal obligations in light of each of these actions. The NRC intends to consider the issues raised by PRM–40–23 and the amendment to it in a single rulemaking action that would make any necessary changes to the uranium mill tailings regulations. The NRC will begin this rulemaking as soon as the full extent of the changes necessary is determined.

The Commission would like to receive public comment on the specific items addressed in this amendment to PRM–40–23. Those who intend to submit comments on the petition may obtain a complete copy of the amendment to the petition from the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

Dated at Washington, DC this 27th day of April 1983.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

48 FR 43051

Published 9/21/83

National Bureau of Standards, Department of Commerce; Withdrawal of a Petition for Rulemaking

See Part 20 Petitions for Rulemaking

PART 40

DOMESTIC LICENSING OF SOURCE MATERIAL

STATEMENTS OF CONSIDERATION

23 FR 1151
Published 2/21/58
Effective 2/21/58

See Part 70 Statements of Consideration.

26 FR 284
Published 1/14/61
Effective 2/13/61

The following amendments to Part 40 constitute an over-all revision of 10 CFR Part 40, "Control of Source Material"

Notice of proposed issuance of the following rules was published in the FEDERAL REGISTER on September 7, 1960 (25 F.R. 8619). A detailed statement of considerations explaining the provisions of the following amendments was published with the notice of proposed rule making. Comments filed by interested persons have been given careful consideration. The following amendments are the same as those incorporated in the notice of proposed rule making, except that § 40.42 has been revised to take into account long-period facility licenses which incorporate in a single document licenses also for source material which may be used as fuel or blanket material.

Accordingly, effective 30 days after publication in the FEDERAL REGISTER, 10 CFR Part 40 is amended to read as follows:

28 FR 8021
Published 8/7/63
Effective 9/6/63

On May 8, 1963 (28 F.R. 4621) the Commission published a proposed amendment of 10 CFR Part 40, "Licensing of Source Material", which would exempt from the licensing requirements of Part 40 the receipt, possession, use, transfer, and import into the United States of glass in the form of finished optical lenses containing not more than 30 percent by weight of thorium.

The notice of proposed rule making allowed 30 days for public comment. No comments have been received in response to the notice of proposed rule making.

Section 150.15(a)(6) of 10 CFR Part 150 provides that persons in Agreement States are not exempt from the Commission's licensing and other regulatory controls with respect to "The transfer of possession or control by the manufacturer, processor, or producer of any equipment, device, commodity, or other product containing source * * * material, intended for use by the general public." The Commission has determined that a finished optical lens is a product intended for use by the general public Accordingly, the transfer of possession or control by the manufacturer of a finished optical lens containing thorium would be subject to Commission licensing even though the unit is manufactured pursuant to an Agreement State license.

Pursuant to the Atomic Energy Act of 1954, as amended, and the Administrative Procedure Act of 1946, the following amendment of 10 CFR Part 40 is published as a document subject to codification, to be effective thirty (30) days after publication in the FEDERAL REGISTER.

30 FR 15802
Published 12/22/65
Effective 1/21/66

Exemption of Thorium Contained in Electric Lamps To Be Used for Illuminating Purposes

On August 17, 1965, the Commission published in the FEDERAL REGISTER (30 F.R. 10203) a proposed amendment of its regulation "Licensing of Source Material," 10 CFR Part 40. The amendment would exempt the receipt, possession, use, transfer and import into the United States of thorium contained in two categories of electric lamps to be used for illuminating purposes.

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendment within 60 days after publication of the notice in the FEDERAL REGISTER. No adverse comments or comments suggesting changes were received. The text of the amendment set out below is identical with the text of the proposed amendment published August 17, 1965.

The Commission has determined that electric lamps to be used for illuminating purposes are products intended for use by the general public. Accordingly, the transfer of possession or control by the manufacturer of such lamps would not be subject to the licensing and regulatory authority of an agreement State even if manufactured pursuant to an agreement State license.

Pursuant to the Atomic Energy Act of 1954, as amended, and the Administrative Procedure Act of 1946, the following amendment of Title 10, Chapter I, Code of Federal Regulations, Part 40, is published as a document subject to codification, to be effective 30 days after publication in the FEDERAL REGISTER.

31 FR 4668
Published 3/19/66
Effective 3/19/66

Miscellaneous Amendments

See Part 20 Statements of Consideration.

31 FR 15145
Published 12/2/66
Effective 12/2/66

Miscellaneous Amendments to Chapter

See Part 9 Statements of Consideration.

32 FR 7172
Published 5/12/67
Effective 5/12/67

On December 22, 1966, the Atomic Energy Commission published in the FEDERAL REGISTER (31 F.R. 16367) a proposed amendment to 10 CFR Part 40, Licensing of Source Material, to eliminate the restriction, in § 40.42, of the terms of source material licenses to 3 years. The amendment would make 10 CFR Part 40 consistent, in that respect, with equivalent provisions in 10 CFR Parts 30 and 70 which govern the licensing of byproduct material and special nuclear material, respectively. The Commission stated, in the notice of proposed rule making, that if it adopted the proposed amendment, the Commission would issue source, byproduct, and special nuclear material licenses for terms of 5 years, except in cases where the nature of the applicant's proposed ac-

tivities indicates a need for a shorter license period.

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendment within 30 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. After consideration of the comments received and other factors involved, the Commission has adopted the proposed amendment. The text of the amendment set forth below is identical with the text of the proposed amendment published on December 22, 1966.

Since the amendment is intended to provide relief from, rather than to impose, restrictions under regulations currently in effect, it will become effective without the customary 30-day notice. Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and the Administrative Procedure Act of 1946, as amended, the following amendment of 10 CFR Part 40 is published as a document subject to codification to be effective upon publication in the FEDERAL REGISTER.

32 FR 15872
Published 11/18/67
Effective 12/18/67

Exemption of Certain Aircraft Engine Parts Containing Nickel-Thoria Alloy

On August 7, 1963, the Atomic Energy Commission published in the FEDERAL REGISTER (28 F.R. 8043) a proposed amendment of § 40.13(c)(4), 10 CFR Part 40, which would have exempted finished products or parts fabricated of, or containing any thorium-metal alloy in which the thorium content in the alloy does not exceed 4 percent by weight. The notice of proposed rule making was published in response to a petition filed by E. I. du Pont de Nemours and Co., Inc., Wilmington, Del., requesting an exemption from licensing requirements for nickel-thorium alloys containing up to 4 percent thorium by weight. Interested persons were invited to submit written comments or suggestions for consideration in connection with the proposed amendment within 30 days after publication of the notice of proposed rule making in the FEDERAL REGISTER.

Subsequent to publication of the proposed exemption for comment, the Commission considered whether this exemption could ultimately result in contamination by thorium of materials used in construction of nuclear reactors, as a result of discarded nickel-thoria parts being incorporated as scrap in the melting of alloys containing nickel. If significant thorium impurities were to be present in materials used in constructing nuclear reactor plants, such impurities could result in additional radioactive fission products in the reactor coolant and potentially in the atmosphere surrounding the reactor plant and in discharged wastes. Among the information considered was the experimental evidence provided by the petitioner on the removal of thoria in slag during metal processing. The petitioner has reported the results of a laboratory experiment that followed commercial melt practices for scrap and fluxing agent additions. These results have shown that essentially all of the thoria introduced into stainless steel and Incomel melting furnaces is separated with the slag. The petitioner also has reported the results of a full-scale melt of Hastelloy alloy X to which a large quantity of nickel-thoria scrap was added. These results also have shown that more than 99 percent of the thoria was removed in the slag and the thorium content in the finished Hastelloy alloy X was substantially below the limits of concern with respect to reactor construction material contamination.

On the basis of currently available data, the Commission has concluded that the thoria (thorium dioxide) covered by this exemption would normally be removed with slag in melting steel and nickel base alloys. Therefore, the Commission considers it unlikely that carryover of thorium during melting of metal scrap, generated in the use of nickel-thoria alloys in jet aircraft engine parts, will contaminate nuclear reactor construction materials to a level which would increase reactor plant radioactivity levels. It is noted, however, that the data on removal of thorium in the metal processing are directly applicable only to thorium dispersed in nickel-thoria alloys in the form of finely divided thoria (thorium dioxide) and the exemption has been limited accordingly.

In order to continue verification that contamination of reactor construction materials by thorium or other similar impurities does not occur or build up over an extended period of time, the Commission will arrange periodically to sample reactor construction materials for thorium and other contaminants. If this periodic sampling shows an increasing thorium level in such materials, the regulation set forth below may be amended from time to time to effect licensing controls to prevent the thorium contained in discarded nickel-thoria aircraft engine parts from contaminating materials used for construction of nuclear reactors.

The Commission will also apply, if determined necessary, specification limits on the amount of thorium and other similar materials allowed as trace contaminants in materials used for construction of nuclear reactors. These limits would differ for different contaminants and for varying reactor uses.

The amendment published below differs from the proposed rule published in the FEDERAL REGISTER (28 F.R. 8043) in the following respects:

1. The exemption has been restricted to thorium contained in any finished aircraft engine part containing nickel-thoria alloy: *Provided*, That: (a) The thorium is dispersed in the nickel-thoria alloy in the form of finely divided thoria (thorium dioxide); and (b) the thorium content in the nickel-thoria alloy does not exceed 4 percent by weight.

2. The exemption is in the form of a new § 40.13(c)(8) rather than an amendment of § 40.13(c)(4) as proposed. No change is being made at this time in the exemption for thorium in tungsten-thorium and magnesium-thorium alloys presently provided in § 40.13(c)(4).

3. The exemption adopted permits the conduct of activities such as repair of finished aircraft engine parts containing nickel-thoria alloy, and the handling and processing of nickel-thoria scrap by scrap dealers and processors. An analysis of the potential health hazards shows that it is highly unlikely that the small number of workers carrying out such operations involving nickel-thoria alloys will be exposed to radiation or airborne concentrations of radioactive material in excess of limits recommended by the International Commission on Radiological Protection for individuals in the general public when averaged over a period of 1 year.

[1] States to which the Commission has transferred certain regulatory authority over radioactive material by formal agreement, pursuant to section 274 of the Atomic Energy Act of 1954, as amended.

4. Present subparagraph (8) of § 40.13 (c) has been redesignated subparagraph (9).

5. Present paragraph (d) of § 40.23 has been redesignated paragraph (e) and a new paragraph (d) has been added to § 40.23 to provide a general license for the export to countries or destinations other than those listed in § 40.90, Southern Rhodesia and Cuba, of thorium contained in finished aircraft engine parts containing nickel-thoria alloy, provided that: (a) The thorium is dispersed in the nickel-thoria alloy in the form of finely divided thoria (thorium dioxide); and (b) the thorium content in the nickel-thoria alloy does not exceed 4 percent by weight.

The foregoing revisions reflect further Commission consideration of the proposed amendment, including additional information and data received after the notice of proposed rule making was published on August 7, 1963.

The Commission has found that the receipt, possession, use, transfer, and import into the United States of thorium contained in any finished aircraft engine part containing nickel-thoria alloy, pursuant to the exemption in § 40.13(c)(8) published below, involve unimportant quantities of source material within the meaning of section 62 of the Atomic Energy Act of 1954, as amended, which are not of significance to the common defense and security, and that such activities can be conducted without unreasonable hazard to life or property. The Commission has also found that the export of thorium in finished aircraft engine parts, pursuant to the general license in § 40.23(d) published below, will not be inimical to the interests of the United States.

The Commission considers that finished aircraft engine parts containing nickel-thoria alloy are not products intended for use by the general public within the purview of § 150.15(a)(6) of 10 CFR Part 150, "Exemptions and Continued Regulatory Authority in Agreement States Under Section 274". Accordingly, the transfer of possession or control of such finished aircraft engine parts in agreement States by the manufacturer, processor, or producer would not be regulated by the Commission.

Pursuant to the Atomic Energy Act of 1954, as amended, and the Administrative Procedure Act of 1946, as amended, the following amendments of 10 CFR Part 40 are published as a document subject to codification, to be effective thirty (30) days after publication in the FEDERAL REGISTER.

34 FR 14067
Published 9/5/69
Effective 9/5/69

Uranium Contained in Counterweights

On July 18, 1969, the Commission published in the FEDERAL REGISTER (34 F.R. 12107) proposed amendments to its regulation "Licensing of Source Material", 10 CFR Part 40, pertaining to the exemption from licensing requirements of uranium contained in counterweights installed in aircraft, rockets, projectiles, and missiles, or stored or handled in connection with installation or removal of such counterweights, and the general license for the export of such counterweights.

The amendments would:

a. Revise § 40.13(c)(5)(ii) to substitute, for the words "Caution—Radioactive Material—Uranium" in the existing legend required to be impressed on each exempt counterweight containing uranium, the words "Depleted Uranium";

b. Delete the existing provision in § 40.13(c)(5)(iii) that the counterweight plating or other covering must not be removed or penetrated;

c. Add a new § 40.13(c)(5)(iii) to require each exempt counterweight to be labeled or marked durably and legibly with the identification of the manufacturer, and the statement: "Unauthorized Alterations Prohibited";

d. Add a new § 40.13(c)(5)(iv) stating that the exemption contained in § 40.13(c)(5) shall not be deemed to authorize the chemical, physical, or metallurgical treatment or processing of exempt counterweights other than repair or restoration of any plating or other covering; and

e. Revise § 40.23(c) to reflect the new legend requirements in § 40.13(c)(5).

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendment within thirty (30) days after publication of the notice in the FEDERAL REGISTER. No comments suggesting changes were received. The text of the amendments set out below is identical with the text of the proposed amendments published July 18, 1969.

The amendments of § 40.13(c)(5) eliminate the provision in the exemption for uranium in counterweights that the plating or other covering not be removed or penetrated and, although prohibiting the chemical, physical, or metallurgical treatment or processing of exempt counterweights, permit the repair or restoration of any plating or other covering of counterweights. The present limitation in the exemption to counterweights on which the plating or covering has not been removed or penetrated is no longer necessary, since (1) experience to date with thousands of counterweights in use over the past several years indicates that present manufacturing techniques provide adequate protection against oxidation of uranium, and (2) activities which would involve processing of uranium are expressly prohibited, except for processes which do not involve exposure hazards significantly different from those involved in handling an undamaged counterweight. The Commission considers that the provisions in the amendments adequately control the low radiation exposures that may result from discarded counterweights.

Since the following amendments relieve from, rather than impose restrictions under regulations currently in effect, they will become effective without the customary 30-day notice. Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 40 are published as a document subject to codification effective upon publication in the FEDERAL REGISTER.

34 FR 19546
Published 12/11/69
Effective 12/11/69

Miscellaneous Amendments

See Part 20 Statements of Consideration.

35 FR 6313
Published 4/18/70
Effective 5/18/70

On December 10, 1969, the Commission published in the FEDERAL REGISTER (34 F.R. 19511) proposed amendments to its regulation "Licensing of Source Material", 10 CFR Part 40, to exempt from licensing requirements piezoelectric ceramic containing not more than 2 percent by weight source material.

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments within sixty (60) days after publication of the notice in the FEDERAL REGISTER. After consideration of the comments and other factors involved, the Commission has adopted the proposed amendments. The text of the amendments set out below is identical with the text of the proposed amendments published December 10, 1969.

The Commission has found that receipt, possession, use, transfer, and import into the United States of piezoelectric ceramic containing not more than 2 percent by weight source material involve unimportant quantities of source material within the meaning of section 62 of the Atomic Energy Act of 1954, as amended, which are not of significance to the common defense and security, and that such activities can be conducted without any unreasonable hazard to life or property.

Under the provisions of § 150.15(a)(6) of 10 CFR Part 150, "Exemptions and Continued Regulatory Authority in Agreement States Under Section 274," the transfer of possession or control by the manufacturer, processor, or producer of piezoelectric ceramic distributed for use under the exemption would be subject to the Commission's licensing and regulatory requirements even if the product is manufactured pursuant to an Agreement State license. By the terms of the exemption, the Commission would exercise such regulatory authority by exempting, under new § 40.13(c)(2)(ii), any person (including a manufacturer, processor, or producer in an Agreement State of piezoelectric ceramic) to the extent that such person transfers piezoelectric ceramic containing not more than 2 percent by weight source material.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 40 are published as a document subject to codification effective thirty (30) days after publication in the FEDERAL REGISTER.

35 FR 12195
Published 7/30/70
Effective 8/29/70

Source Material Reports

On September 12, 1969, the Atomic Energy Commission published in the FEDERAL REGISTER (34 F.R. 14333) proposed amendments to its regulations, 10 CFR Part 40, "Licensing of Source Material," and 10 CFR Part 150, "Exemptions and Continued Regulatory Authority in Agreement States Under Section 274," which would require certain AEC and Agreement State licensees to submit reports concerning transfers, inventory, and thefts of source material.

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments within 60 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. Upon consideration of the material submitted in response to the notice of proposed rule making, and other factors involved, the Commission has adopted the amendments set forth below.

The only substantive change from the amendments published for comment is the inclusion of exemptions from the source material reporting requirements for magnesium-thorium and tungsten-thorium alloys containing 4 percent or less of thorium; chemical catalysts containing not more than 15 percent uranium by weight, in which the uranium has been depleted to 0.4 percent or less of U^{235}; and exports of certain unimportant quantities of source material. To the extent that persons receive, possess, use, transfer, deliver, or import unimportant quantities of source material exempt from licensing requirements under § 40.13 of Part 40, they would not be subject to the reporting requirements set out below by the operation of § 40.13.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments of Title 10, Chapter I, Code of Federal Regulations, Parts 40 and 150, are published as a document subject to codification, to be effective thirty (30) days after publication in the FEDERAL REGISTER.

36 FR 145
Published 1/6/71
Effective 2/5/71

Fees for Facilities and Materials Licenses

See Part 170 Statements of Consideration.

36 FR 10938
Published 6/5/71
Effective 7/5/71

Safeguards Reporting Requirements for Source Material

On February 6, 1971, the Atomic Energy Commission published in the FEDERAL REGISTER (36 F.R. 2567) proposed amendments to its regulations, 10 CFR Part 40, "Licensing of Source Material" and 10 CFR Part 150, "Exemptions and Continued Regulatory Authority in Agreement States Under Section 274," which would extend the requirement for reporting thefts or diversions of source material to additional licensees who possess such material and delete the requirement for reporting exports or imports of source material by persons who do not actually receive or transfer the material.

All interested persons were invited to submit written comments and suggestions in connection with the proposed amendments within 30 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. Upon consideration of the comments received in response to the notice of proposed rule making, and other factors involved, the Commission has adopted the amendments set forth below which are identical to those published for public comment.

The extension of the reporting requirements to all thefts or diversions of licensed source material of more than 15 pounds at any one time, or 150 pounds in any 1 calendar year is expected to better enable the Commission to assure that source material is safeguarded against diversion to unauthorized use. The reporting requirement for imports and exports, as differentiated from transfers and receipts, has been eliminated as unnecessary.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments of title 10, Chapter I, Code of Federal Regulations, Parts 40 and 150, are published as a document subject to codification, to be effective thirty (30) days after publication in the FEDERAL REGISTER.

36 FR 12731
Published 7/7/71
Effective 7/7/71

Miscellaneous Amendments

See Part 50 Statements of Consideration.

37 FR 3985
Published 2/25/72
Effective 3/26/72

Miscellaneous Amendments to Chapter

See Part 20 Statements of Consideration.

37 FR 5745
Published 3/21/72
Effective 3/21/72

Prohibition of Site Preparation and Related Activities

See Part 50 Statements of Consideration.

38 FR 1271
Published 1/11/73
Effective 1/11/73

Miscellaneous Amendments to Chapter

See Part 30 Statements of Consideration.

38 FR 2330
Published 1/24/73
Effective 1/24/73

Miscellaneous Amendment

See Part 2 Statements of Consideration.

39 FR 26279
Published 7/18/74
Effective 8/19/74

Environmental Protection; Licensing and Regulatory Policy and Procedures

See Part 51 Statements of Consideration.

40 FR 8774
Published 3/3/75
Effective 3/3/75

Energy Reorganization Act; Revisions to Chapter 1 to Reflect Organizational and Procedural Changes

See Part 2 Statements of Consideration.

40 FR 53230
Published 11/17/75
Effective 12/17/75

Effluent Monitoring and Reporting Requirements

See Part 70 Statements of Consideration.

41 FR 16445
Published 4/19/76
Effective 4/19/76

Miscellaneous Changes to Chapter

See Part 20 Statements of Consideration.

41 FR 53330
Published 12/6/76
Effective 1/5/77

PART 40—LICENSING OF SOURCE MATERIAL

Use of Depleted Uranium in Industrial Products or Devices

On January 10, 1975, the Atomic Energy Commission published in the FEDERAL REGISTER (40 FR 2209) proposed amendments to its regulations in 10 CFR Part 40 to issue a general license to receive, acquire, possess, use, or transfer depleted uranium in industrial products or devices for mass-volume applications, to set out requirements for issuance of specific licenses to manufacture, import, or transfer industrial products and devices for use under the proposed general license, and to define depleted uranium. Interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments by February 24, 1975.

On January 19, 1975, the Nuclear Regulatory Commission, established by the Energy Reorganization Act of 1974 (Pub.

L. 93–438), assumed the licensing and related regulatory functions of the former Atomic Energy Commission.

One commentator recommended that the limiting percentage of uranium–235 in depleted uranium be lowered from 0.711 percent to about 0.3 percent by weight. Defining depleted uranium in § 40.4(o) as uranium in which the isotope uranium–235 is less than 0.711 weight percent is consistent with enrichment service practice and standards for protection against radiation. Depleted uranium is available from enriching services as tails materials in desired assays ranging from 0.20 weight up to 0.70 weight percent uranium–235. In the Nuclear Regulatory Commission's regulation, "Standards for Protection Against Radiation," 10 CFR Part 20, a single value of 3.6×10^{-7} curies per gram of uranium is given as the specific activity of depleted uranium and, therefore, applies to uranium depleted by any amount in the isotope uranium–235.

Several commentators asked if uranium mill tailings are considered depleted uranium and are used in industrial products or devices. Depleted uranium is the tails from the uranium enrichment process (in which a fraction of the uranium–235 is removed from the total uranium present) and not the tails from the milling process (in which a fraction of the total uranium present is removed from ores). The ore residue contains a lower concentration of uranium than the original ore, but the remaining uranium is not depleted in any of its species of atoms of uranium by the milling process. Furthermore, the mill tailings (a sandy ore residue) would not provide the concentrated mass in a small volume sought for the industrial products or devices covered by the general license. Thus, mill tailings are not depleted uranium and cannot be used pursuant to the general license set forth below.

Another commentator expressed the opinion that the proposed amendments of 10 CFR Part 40 comprise a significant action under the National Environmental Policy Act of 1969 and an environmental impact statement is thus required. The January 10, 1975, FEDERAL REGISTER notice stated on page 2210 that the Atomic Energy Commission had determined that an environmental impact statement pursuant to the National Environmental Policy Act of 1969 need not be prepared in connection with the promulgation of the regulations because they will not significantly affect the quality of the human environment. An environmental impact appraisal setting forth the basis for that determination was made available January 8, 1975, and may be inspected at the Nuclear Regulatory Commission's Public Document Room at 1717 H Street NW, Washington, D.C. Single copies of the environmental impact appraisal may be obtained by writing the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Office of Standards Development.

After consideration of the comments received and other factors involved, the Nuclear Regulatory Commission has adopted the proposed amendments with certain modifications which reflect creation of the NRC and include minor editorial changes of a clarifying nature.

In § 40.25(c)(1)(iii), the phrase "procedures furnished under" have been changed to "procedures identified in" because § 40.25(c)(1)(ii) requires a registrant to furnish a statement certifying that procedures have been developed rather than to furnish the procedures themselves.

In §§ 40.25(d) and 40.35(a), the conditions of the licenses have been amended to require that persons who transfer depleted uranium for use under § 40.25 provide a copy of the general license in § 40.25 and a copy of Form NRC 244 to each transferee (plus a note explaining that use of the product or device containing depleted uranium is regulated by the Agreement State in which the transferee is located). Under these conditions, the users will be informed of the need to register and other requirements of the general license.

In § 40.34(a)(1), a new subdivision (iii) has been added to clarify that each industrial product or device for which an application is submitted must provide unique benefits as a result of the presence of depleted uranium for a mass-volume application in the product or device. (Unique benefits means that the demonstrated usefulness of the industrial product or device is enhanced by the physical properties of a concentrated mass of depleted uranium in a small volume of the product or device. When such use offers a clear advantage, even of limited degree, over other materials the "unique" property will be considered to be satisfied.)

In the case of industrial products or devices whose unique benefits are questionable, § 40.34(a)(2) provides that the Commission will approve an application for a specific license only if the product or device under consideration is found to combine a high degree of utility and low probability of uncontrolled disposal and dispersal of significant quantities of depleted uranium into the environment. Thus, § 40.34(a)(2) will eliminate unnecessary regulatory costs by reducing the number of license applications for industrial products or devices having marginal benefit or containing depleted uranium for a trivial mass-volume purpose.

To provide positive identification of industrial products or devices containing depleted uranium, a new paragraph (ii) has been added to § 40.35(a)(2) requiring the labeling or marking of each unit to state that the receipt, possession, use, and transfer of the product or device are subject to a general license or the equivalent and the regulations of the NRC or an Agreement State.

In § 40.35(a)(4)(ii), the phrase "upon request of that Agency" has been deleted from the end of the last sentence. As a result each person licensed under § 40.34(a) will be clearly required to file with each responsible Agreement State Agency a report which would furnish the information specified in § 40.35(a)(4)(ii) or state that no transfers were made to that Agreement State during the reporting period.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 40 are published as a document subject to codification.

42 FR 6579
Published 2/3/77
Effective 3/7/77

PART 40—LICENSING OF SOURCE MATERIAL

Exemption of Persons Using Thorium in Personnel Neutron Dosimeters

The Nuclear Regulatory Commission is amending its regulation 10 CFR Part 40 to exempt from licensing and regulatory requirements persons using personnel neutron dosimeters containing not more than 50 milligrams of thorium. The exemption does not authorize the manufacture of the personnel neutron dosimeters. Such manufacture would have to be authorized by a license issued by the Commission or an Agreement State.

EFFECTIVE DATE: March 7, 1977.

FOR FURTHER INFORMATION CONTACT: 301–443–6910

By letter dated October 22, 1973, R. S. Landauer, Jr. and Co., Glenwood, Illinois, filed with the Atomic Energy Commission a petition for rule making (PRM 40–19) requesting an exemption from licensing requirements for personnel dosimeters containing not more than 50 milligrams of thorium per dosimeter. This notice of rule making responds to the request of R. S. Landauer, Jr. and Co.

BACKGROUND

On June 24, 1976, the Nuclear Regulatory Commission published in the FEDERAL REGISTER (41 FR 26032) a proposed amendment of its regulation 10 CFR Part 40 which would exempt from the regulatory requirements of Part 40 and the licensing requirements of section 62 of the Atomic Energy Act of 1954, as amended, the receipt, possession, use, transfer, or import of personnel neutron dosimeters containing not more than 50 milligrams of thorium each.

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendment and a

draft environmental statement by August 9, 1976.

One commentator on the proposed rule did not agree with the proposed method of disposal of obsolete dosimeters through normal refuse disposal facilities, as discussed by the Commission (41 FR 26033), and suggested that the dosimeter supplier should be required to dispose of all obsolete and used dosimeters through a licensed radioactive disposal firm. The Commission has considered the comment in light of the projected distribution and use of the dosimeters. The bulk of the dosimeters will be loaned or leased to exempt persons under the terms of dosimetry service contracts. Such dosimeters would exentually be returned to the licensed manufacturer who would assemble usable thorium foils into new dosimeters or dispose of thorium foils damaged or unusable for whatever cause by using commercial radioactive waste disposal services.

Disposal of a dosimeter through normal refuse disposal facilities could occur if an exempt person were to lose or misplace a dosimeter, or dispose of a dosimeter that he owns or possesses by discarding it as trash rather than by returning it to the licensed manufacturer. It was this relatively rare event that the Commission characterized as highly unlikely to result in any significant radiation safety problem. Therefore, no change in the text of the rule is warranted with respect to disposal of dosimeters.

After consideration of the comments and other factor involved, the Commission has adopted the amendment. The text of § 40.13(c)(1) set out below is identical with the text of the proposed amendment published June 24, 1976.

The amendment exempts from the regulatory requirements of Part 40 and the licensing requirements of section 62 of the Act the receipt, possession, use, transfer, or import of personnel neutron dosimeters by adding this product as a new category in § 40.13(c)(1). As amended, § 40.13(c)(1) exempts thorium contained in (i) incandescent gas mantles, (ii) vacuum tubes, (iii) welding rods, (iv) electric lamps for illuminating purposes: *Provided*, That each lamp does not contain more than 50 milligrams of thorium, (v) germicidal lamps, sunlamps, and lamps for outdoor or industrial lighting: *Provided*, That each lamp does not contain more than 2 grams of thorium, (vi) rare earth metals and compounds, mixtures, and products containing not more than 0.25 percent by weight thorium, uranium, or any combination of these, or (vii) personnel neutron dosimeters provided that each dosimeter does not contain more than 50 milligrams of thorium.

The Commission has found that receipt, possession, use, transfer, or import into the United States of personnel neutron dosimeters containing not more than 50 milligrams of thorium each involve unimportant quantities of source material within the meaning of section 62 of the Atomic Energy Act of 1954, as amended, which are not of significance to the common defense and security and that such activities can be conducted without any unreasonable hazard to life or property.

Under the provisions of § 150.15(a)(6) of 10 CFR Part 150, "Exemptions and Continued Regulatory Authority in Agreement States Under Section 274," the transfer of possession or control by persons in Agreement States who manufacture, process, or produce personnel neutron dosimeters containing thorium for use by exempt persons are subject to the Commission's licensing and regulatory requirements, even though the dosimeters are manufactured under an Agreement State license. By the terms of the exemption, the Commission is exercising such regulatory authority by exempting, under new § 40.13(c)(1)(vii), any person (including a manufacturer, processor, or producer in an Agreement State of personnel neutron dosimeters) to the extent that such person transfers personnel neutron dosimeters containing not more than 50 milligrams of thorium.

Pursuant to the National Environmental Policy Act of 1969, and the Commission's regulations in 10 CFR Part 51, "Licensing and Regulatory Policy and Procedures for Environmental Protection," the Commission's Office of Standards Development has prepared a final environmental impact statement in connection with this action to amend Part 40 of the Commission's regulations. The statement is available for inspection by the public in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C. In about two weeks after publication of this notice in the FEDERAL REGISTER, copies of the statement will be available as NUREG–0137 from the National Technical Information Service, Springfield, Virginia 22161. The price will be $5.00 for paper copy and $3.00 for microfiche.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to Title 10, Chapter I, Code of Federal Regulations, Part 40 is published as a document subject to codification.

42 FR 28891
Published 6/6/77
Effective 7/6/77; § § 21.6, 21.21(a), and 21.51 effective 1/6/78
(7/6/77 effective date extended to 8/10/77)

Reports to the Commission Concerning Defects and Noncompliance

See Part 21 Statements of Consideration.

43 FR 6915
Published 2/17/78
Effective 5/3/78

Export and Import of Nuclear Facilities and Materials

See Part 110 Statements of Considerations.

43 FR 52201
Published 11/9/78
Effective 11/9/78

Miscellaneous Amendments

See Part 20 Statements of Consideration.

44 FR 17479
Published 3/22/79
Effective 6/5/79

Timely Notification of Discontinued Licensed Activities

See Part 30 Statements of Considerations.

44 FR 50012
Published 8/24/79
Effective 8/24/79
Comment period expires 10/24/79

10 CFR Parts 40, 150

Uranium Mill Tailings Licensing

AGENCY: Nuclear Regulatory Commission.

ACTION: Final Regulations with request for comments.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations to conform to the requirements of the Uranium Mill Tailings Radiation Control Act of 1978 and to the standards set forth in the draft Generic Environmental Impact Statement Uranium Milling. The bulk of these regulations are being published in proposed form. (See proposed rules published elsewhere in this part of the **Federal Register**.) The Commission finds it necessary, however, to issue as immediately effective a temporary general license to authorize the possession and storage of mill tailings or wastes to prevent existing milling operations in both Agreement and non-Agreement States from being in technical violation of the Atomic Energy Act of 1954, as amended by the Uranium Mill Tailings Radiation Control Act of 1978. The immediately effective regulations relating to the general license, such as amendments to the definition of "byproduct material," and to the coverage of tailings in Agreement States, serve two functions. They reflect the NRC's legal interpretation of the new Act necessitating the general license and clarify the application of the general license. Accordingly, these regulations must also be made immediately effective.

DATES: Effective date: August 24, 1979. Comments on or before October 24, 1979.

ADDRESSES: Written comments should be submitted to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Copies of comments on these amendments may be examined in the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Don F. Harmon, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (phone 301/433–5910) or Hubert J. Miller, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (phone 301/427–4103).

SUPPLEMENTARY INFORMATION: These immediately effective regulations are closely related to the proposed rules implementing the Uranium Mill Tailings Radiation Control Act of 1978 and the draft Generic Environmental Impact Statement on Uranium Milling. Thus, the two sets of amendments should be read together. (See proposed rules published elsewhere) in this part of the **Federal Register.**

On May 17, 1979, the Commission met to determine the issue of the timing of the effectiveness of certain requirements of the Uranium Mill Tailings Radiation Control Act of 1978. At this meeting it was determined that the NRC has immediate licensing authority over mill tailings, now defined as section 11e(2) byproduct material in the Atomic Energy Act of 1954, as amended; that the new requirements for agreement state regulation of tailings and milling operations will not take effect until three years after the date of enactment of the mill tailings legislation; and that during that three-year interim, the legislation requires that NRC assume concurrent jurisdiction over tailings in both Agreement and non-Agreement States. The Commission also determined that the definition of section 11e(2) byproduct material includes the above-ground wastes from in situ extraction operations.

New § 40.26 is added to 10 CFR Part 40 to establish a temporary general license to authorize the possession and storage of mill tailings or wastes. The general license will prevent existing milling operations with valid licenses from being in technical violation of the Atomic Energy Act of 1954, as amended by the Uranium Mill Tailings Radiation Control Act of 1978. The Commission believes this general license is consistent with the Congressional intent to implement the mill tailings legislation in a manner designed to minimize unnecessary disruption. As provided in section 40.20 of 10 CFR Part 40, a general license is effective without filing of an application or the issuance of licensing documents to particular persons. This general license is applicable only to persons who possess appropriate specific licenses issued by the Commission or Agreement States to authorize uranium milling activities. The authority to possess, use, or own tailings under the general license shall expire upon the expiration or renewal of the underlying NRC or Agreement State specific milling license.

The Commission notes that all of its existing active milling licenses have been reviewed or are being reviewed under the provisions of the National Environmental Policy Act (NEPA). All NRC licenses presently contain, or will contain, requirements for tailings reclamation, mill and site cleanup, and surety arrangements to cover these costs. For the most part, present requirements and conditions are substantially the same as the requirements set forth in the proposed amendments concerning uranium milling, and most milling operations in non-Agreement States have already committed to specific plans for decommissioning and tailings disposal meeting the new requirements. NRC uranium milling licenses that have been granted under the NEPA process during the period over which the NRC's generic environmental impact statement or uranium milling was being developed were issued with the express condition that approved waste generating processes and mill tailings management practices were subject to revision in accordance with the conclusions of the final generic environmental impact statement and any related rulemaking. In the process of reevaluating approved mill operator plans upon expiration or renewal to meet the new regulatory requirements, the NRC staff plans to incorporate into applicable specific licenses the authority to possess and store byproduct material covered by this general license.

Under the provisions of this general license, Agreement State licensees will not be required to obtain a specific NRC license until such time as the licensee's Agreement State specific license expires or is renewed. The Commission notes in this regard that there presently exist Agreement State regulations and requirements governing the control of tailings in Agreement States that appear adequate to protect the public health and safety during the interim period until such licenses expire or are renewed. At such time as each Agreement State license expires or is renewed, it will be necessary at least until November 1, 1981, for the Agreement State licensee to apply for and obtain a specific NRC license covering the possession of byproduct material. The Commission intends to review each application under the NEPA process and impose any necessary requirements as may be necessary to protect the public health and safety. Given that tailings piles in Agreement States covered by this general license have been in existence for several years, the Commission does not believe that the relatively small incremental increase to such piles during the interim time until licenses expire or are renewed will foreclose available alternatives for reducing or avoiding adverse environmental and other effects or result in irreversible or irretrievable commitments of resources. The Commission has concluded that the issuance of the general license is not a major Federal action significantly affecting the quality of the human environment and as such does not require an environmental impact statement. The Commission further notes in this regard that the authority to possess, own, or receive title to tailings now defined as byproduct material under this general license is subject to NRC remedial orders as necessary to protect the public health and safety and to correct any situations in which events might require more immediate Commission attention to insure proper control of tailings.

Section 40.4 of 10 CFR Part 40 is amended to include a new definition of "byproduct material." This amendment, which includes uranium and thorium mill tailings as byproduct material licensable by the Commission, is required by the recently enacted Uranium Mill Tailings Radiation Control Act. Discrete above-ground wastes from in situ or solution extraction are covered by this definition, although the underground ore bodies depleted by the extraction process are not covered. The Commission considered amending 10 CFR Part 30, "Rules of General Applicablility to Licensing of Byproduct Material," to specify licensing requirements concerning tailings, but has concluded that it is more appropriate to amend 10 CFR Part 40. The legislative record of the mill tailings legislation makes it clear that the expanded definition of byproduct material covers only mill tailings or wastes, which are exclusively associated with 10 CFR Part 40 licensing matters.

The amendments to 10 CFR Part 150 are to conform to Part 40's new definition of byproduct material and to Part 40's coverage of such byproduct material in Agreement States for the three years following enactment of the Uranium Mill Tailings Radiation Control Act of 1978. This is in accordance with

the statute's provisions requiring NRC licensing of tailings in Agreement States for the three-year interim. Pursuant to the mill tailings legislation, however, Agreement States may exercise concurrent jurisdiction over tailings and wastes for the three-year interim.

The Commission finds that because the regulations supporting the general license must be effective immediately so as to prevent existing milling operations from being in technical violation of the Atomic Energy Act, good cause exists pursuant to 5 U.S.C. 553 to waive the 30-day comment period, as impracticable and contrary to the public interest, and make the amendments to 10 CFR 40.1, 40.2a, 40.3, 40.4, 40.26, 150.3, and 150.15 immediately effective. The Commission notes in this regard that informal written comments on this matter were solicited and received from industry, environmental groups, and several states. (These comments may be found in the Commission's public document room in a memorandum dated May 9, 1979, from the Executive Legal Director to the Commission entitled "Staff Response to the Commission Request for Further Information Regarding SECY-79-88 'Timing of Certain Requirements of the Uranium Mill Tailings Radiation Control Act of 1978'.") Comments on these amendments are invited, however, and the new regulations remain subject to further modification in response to such comments.

(Secs. 11.e(2), 81, 83, 84, 161b, 174; Pub. L. No. 83-703, 68 Stat. 948 et seq. (42 U.S.C. 2014e.(2), 2111, 2113, 2114, 2201b, 2021)).

Dated at Washington, D.C. this 22nd day of August 1979.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

Regulatory Changes

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the Uranium Mill Tailings Radiation Control Act of 1978, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapters 40 and 150, Code of Federal Regulations are published as a document subject to codification.

45FR14199
Published 3/5/80
Effective 3/5/80

Minor and Clarifying Amendments

See Part 1 Statements of Consideration

45 FR 18905
Published 3/24/80
Effective 3/24/80

Deletion of Reference to Panama Canal Zone; Minor Amendments

See Part 4 Statements of Consideration.

45 FR 50705
Published 7/31/80
Effective 7/31/80
Effective Date 12/24/80 *
Safeguards on Nuclear Material-Implementation of US/IAEA Agreement

See Part 75 Statements of Consideration.

45 FR 55419
Published 8/20/80
Effective 9/19/80

10 CFR Part 40

Deletion of Source Material Medicinals From the General License for Small Quantities of Source Material

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its licensing regulations by deleting the provision for general license authorization of the use of source material [1] in humans by physicians, pharmacists, and other persons receiving source material in the form of medicinals or drugs. Thorotrast, containing alpha-emitting thorium-232 dioxide, was the only source material medicinal used in humans. However, as the radiobiological hazards of alpha-emitting radionuclides became known, the product fell into disuse and production of Thorotrast was discontinued in 1965. This action will require authorization by means of an NRC specific license for internal or external administration of source material, or the radiation therefrom, to human beings.

EFFECTIVE DATE: September 19, 1980.

FOR FURTHER INFORMATION CONTACT: Deborah A. Bozik, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (Telephone 301-443-5860).

SUPPLEMENTARY INFORMATION: Thorotrast, authorized for use by the general license in § 40.22, "Small quantities of source material," of 10 CFR Part 40, and used as an X-ray contrast agent, has been the only source material utilized as a medicinal; no other thorium or uranium compounds have been used as source material medicinals. Thorotrast is the colloidal dioxide of thorium-232 which is an alpha-emitting radionuclide. As the radiobiological hazards of these radionuclides became apparent, the carcinogenic potential of Thorotrast became evident, and, in 1965, the production of Thorotrast was stopped. Improvements in X-ray machines and imaging techniques have resulted in Thorotrast being replaced with nonradioactive contrast agents. The Food and Drug Administration (FDA) terminated the approved New Drug Application (NDA) for Thorotrast on June 13, 1977.

NRC and FDA both strive for consistency with respect to each other's regulations. On March 6, 1980, NRC published a proposed rule (45 FR 14589) to amend the general license in § 40.22 by deleting the authorization for the following persons to use and transfer small quantities of source material:

(1) Pharmacists using source material solely for compounding medicinals;

(2) Physicians using source material for medicinal purposes; and

(3) Persons receiving possession of source material from pharmacists and physicians in the form of medicinals or drugs.

Under the proposed rule, the following groups would still retain their authorization under this general license to use small quantities of source material for research, development, educational, commercial or operational purposes:

(1) Commercial and industrial firms;

(2) Research, educational and medical institutions; and

(3) Federal, State and local government agencies.

A new paragraph would be added under the proposed rule to the general license in § 40.22 of 10 CFR Part 40 which would prohibit licensees from administering source material, or the radiation therefrom, either internally or externally, to human beings, except where authorized by an NRC specific license.

The public was invited to submit written comments on the proposed rule by May 6, 1980. Eight comments were received, and all supported the proposed amendment. One commenter qualified his support by inquiring if the people whose authorization is being withdrawn by this amendment have been making

[1] Source material, as defined in 10 CFR 40.4(h) means, among other things, uranium or thorium, or any combination thereof, in any physical or chemical form.

*Amended 45 FR 84967

other use of source material. To the best of the Commission's knowledge, no one in the affected groups has been using source material since Thorotrast production was discontinued in 1965. Therefore, the Commission is adopting the final rule in the form identical to the proposed amendment.

Under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to Title 10, Chapter I, Code of Federal Regulations, Part 40 is published as a document subject to codification.

45 FR 65521
Published 10/3/80
Effective 11/17/80

Uranium Mill Licensing Requirements

See Part 30 Statements of Consideration

46 FR 13497
Published 2/23/81
Effective 2/23/81

10 CFR Part 40

Uranium Mill Licensing Requirements

Correction

On Friday, February 6, 1981, a correction to 10 CFR Part 40 was published on page 11237. The printed format of the correction was misleading, however. For the convenience of the reader, the changes made by that correction are clarified, and the appropriate Code of Federal Regulations text is included as follows:

1. On page 65531 in the **Federal Register** of Friday, October 3, 1980, a new paragraph added to § 40.31 was incorrectly designated as (g) instead of (h). Therefore, on page 65531, in the center column, the eleventh amendatory instruction is corrected to read:

"11. Section 40.31 of 10 CFR Part 40 is amended by adding a new § 40.31(h)

2. In addition, Appendix A to Part 40 (appearing on page 65533) is corrected by changing references from "§ 40.31(g)" to "§ 40.31(h)" wherever they occur in the second and third paragraphs.

46 FR 13971
Published 2/25/81
Effective 3/27/81

Disposal of High–Level Radioactive Wastes In Geologic Repositories: Licensing Procedures

See Part 60 Statements of Consideration

46 FR 44418
Published 9/4/81
Effective 9/4/81

Regional Licensing Program

See Part 30 Statements of Consideration

46 FR 55505
Published 11/10/81
The general license is effective 11/8/81.

10 CFR Part 40

Issuance of General License

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is issuing a general license to authorize uranium mill operators in Agreement States to possess and dispose of mill tailings. The general license is of a temporary nature and required by law to preclude the appearance of technical violations of the Atomic Energy Act of 1954, as amended.

DATES: The general license is effective November 8, 1981.

FOR FURTHER INFORMATION CONTACT: Robert L. Fonner, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: (301) 492–8692.

SUPPLEMENTARY INFORMATION: Under the Surface Transportation Assistance Act Amendments of 1978 (Pub. L. 96–106, 93 Stat. 799 (1979)), section 204 of Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), was amended to clarify the respective jurisdictions of the Commission and Agreement States for the three year period commencing upon enactment of the latter Act (Nov. 8, 1978) and for the following years.

In particular, the 1979 amendment added a new section 204(h)(3) to UMTRCA which reads as follows:

(3) Notwithstanding any other provision of this title, where a State assumes or has assumed, pursuant to an agreement entered into under section 274b. of the Atomic Energy Act of 1954, authority over any activity which results in the production of byproduct material, as defined in section 11e.(2) of such Act, the Commission shall not, until the end of the three-year period beginning on the date of the enactment of this Act, have licensing authority over such byproduct material produced in any activity covered by such agreement, unless the agreement is terminated, suspended, or amended to provide for such Federal licensing. If, at the end of such three-year period, a State has not entered into such an agreement with respect to byproduct material, as defined in section 11e.(2) of the Atomic Energy Act of 1954, the Commission shall have authority over such byproduct material.

The last sentence of section 204(h)(3) states clearly that, absent an amendment to an existing Agreement, the Commission shall have authority over tailings in Agreement States as of November 8, 1981, the end of the three-year period referred to in section 204(h)(3). This consequence results from the operation of law, and the accession of statutory jurisdiction to the Commission requires no further positive action on the part of the Commission or the Agreement State to become effective.

Accordingly, in view of the fact that none of the affected Agreement States (Washington, Colorado, Texas, and New Mexico) has executed an amendment to its Sec. 274 Agreement providing for relinquishment of Federal licensing and regulatory authority over mill tailings and assumption thereof by the State, the Nuclear Regulatory Commission will have licensing and regulatory authority over such material as of November 8, 1981. The new Commission jurisdiction relates only to the tailings and does not affect State licensing and regulation of the processing of source material under current effective Agreements.

Current Commission regulations make no provision for the unlicensed possession of tailings. A consequence of this is that Agreement State uranium mill operators would be technically in violation of Section 81 of the AE Act, and technically could be subject to both criminal penalties under section 223 of the AE Act, and civil penalties under section 234 of the AE Act if the Commission fails to take some affirmative action. In addition, the Commission needs to establish a legal basis for taking future action, if necessary. In order to avoid any implication of wrongful conduct on the part of uranium mill operators in Agreement States and to provide a basis for future Commission action, the Commission is authorizing Agreement State uranium mill operators to possess and dispose of byproduct material produced in the course of processing source material ore for its uranium content under current Agreement State

licenses by the issuance of an immediately effective general license subject to the condition that the operator shall comply with all conditions in its Agreement State license for management and disposal of byproduct material.

Because it is anticipated that the Agreement States will most likely secure amendments to their Agreements, the general license is also conditioned to terminate for each general licensee in a given State when such an amendment is executed.

The general license is intended to fill the gap between November 8, 1981, when the Commission gains jurisdiction over uranium mill tailings in Agreement States, and the time that the affected Agreement States and the Commission execute amendments to existing Agreements adding uranium mill tailings to the categories of nuclear materials already included in the Agreement. Four states are actively seeking such an amendment—Washington, Colorado, Texas, and New Mexico. Barring unforeseen obstacles, the Commission anticipates that an amendment to the Agreement will be executed in late November for Washington, in December for Colorado, and early in 1982 for Texas. Since complete amendment documentation has not yet been received from New Mexico it is not possible to forecast when an amendment can be executed.

In addition the Commission is aware that proposals have been introduced in the Congress of the United States to defer full implementation of the Uranium Mill Tailings Act Agreement State provisions for about one year, including a deferral of the Commission's accession to jurisdiction. These proposals have been attached to NRC appropriations legislation that is near completion. Nonetheless, the Commisson believes that it is desirable to clarify the legal status of uranium mill operators in Agreement States and their relationship to the Federal Government and to preclude the possibility of a time gap during which the waste disposal activities of such operators are arguably unregulated.

In view of the above the general license is conditioned to terminate in any Agreement State when an amendment to the Agreement covering tailings is executed. The general license is not conditioned to terminate upon enactment of current legislative proposals because it is not clear at this time whether those proposals will change the legal structure of the Uranium Mill Tailings Radiation Control Act, or simply preclude the expenditure of appropriated funds on implementation of the Commission's program in Agreement States based upon the codified regulations in Appendix A to 10 CFR Part 40. If the Congress alters the legal structure now existing in UMTRCA and defers Commission accession to jurisdiction in Agreement States, then the general license will be of no force and effect by virtue of the Congressional action; thus there is not need for the Commission to cover that contingency in the general license.

In making the general license dependent upon compliance with waste disposal conditions in State issued source material licenses the Commission is not implying or concluding that such State licenses are adequate or inadequate with respect to regulation of mill tailings. The general license is a temporary measure to fill a legal void and not a validation or rejection of existing State programs. The evaluation and validation of State programs for mill tailings regulation is part of the process of reviewing such programs for the purpose of executing amendments to Agreements. That process is now proceeding independently of this action.

The Commission notes that the general license imposes no new reporting or recording keeping requirements on the general licensees, nor does it impose any other discernible economic burden on Agreement State source material licensees. Accordingly, the Commission certifies under the Regulatory Flexibility Act of 1980, that the general license will not have a significant impact on a substantial number of small entities. There are no more than a dozen affected persons, each a corporation of substance.

The general license is being made effective immediately. Notice and public procedure are impracticable because of the immediate need to provide a legal basis for the affected Agreement State mill operators to possess and dispose of tailings. Notice and public procedure are also unnecessary because the purpose of the general license is to remove an inference of illegality in the activities of state licensed mill operators. The general license continues the status quo and imposes no added burden on Agreement State licensees. For the same reasons the Commission is also exercising its authority to dispense with the usual 30-day notice period required by 5 U.S.C. 553(d).

Therefore, pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendment to Title 10, Chapter 1, Code of Federal Regulations, Part 40, is published as a document subject to codification.

46 FR 62396
Published 12/24/81
Effective 12/24/81

10 CFR Part 40

Clarification of Exemption for Uranium Shielding in Shipping Containers

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations concerning the domestic licensing of source material to clarify the conditions for exemption of uranium used as shielding in shipping containers. The amendment replaces a reference to a group of container specifications in a former section in Department of Transportation regulations by a statement of the single specification for encasement of the uranium. This single specification was obtained from the deleted section of DOT regulations. This clarification pertains to the authorization for possession and use of the uranium shielding under an existing NRC exemption from regulatory requirements and has no effect on transportation regulations.

EFFECTIVE DATE: December 24, 1981.

FOR FURTHER INFORMATION CONTACT: Mr. Donald O. Nellis, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: 301/443–5825.

SUPPLEMENTARY INFORMATION: The Nuclear Regulatory Commission is amending its rules to clarify the exemption from regulatory requirements of uranium used as shielding in shipping containers. The amendment pertains only to the exemption provided in § 40.13(c)(6) of NRC regulations for the receipt, possession, use or transfer of uranium shielding in shipping containers. The amendment has no effect on NRC requirements in 10 CFR Part 71 for packaging and transportation of radioactive material.

Background

In 1961 the U.S. Atomic Energy Commission amended its regulations to provide an exemption from its licensing requirements for uranium used as shielding in shipping containers. In establishing the exemption, the Commission considered it desirable to require cladding of the uranium so as to reduce surface radiation levels and contain any uranium oxidation products. Accordingly, a requirement for cladding the uranium was included by reference

to a set of shipping container requirements then in the U.S. Interstate Commerce Commission (a predecessor of the Department of Transportation) transportation regulations.

Although considered convenient at the time, this particular reference in the U.S. AEC (now NRC) regulations of a section from another federal agency's regulations has been a source of administrative inconvenience. Over the years, changes in the referenced section of the ICC regulations (e.g., changing the name of the agency and the section number) and, more recently, deletion of the entire section from DOT regulations, have caused questions about the applicability of 49 CFR 178.250 of DOT regulations to the exemption in § 40.13(c)(6).

The Regulation

The amendment of § 40.13(c)(6) will replace the reference to the set of shipping container requirements that were contained in 49 CFR 178.250 of DOT regulations by a single requirement which has been selected from that set. This single requirement for minimum cladding of the uranium shielding constitutes no substantive change from the expected cladding when the entire § 178.250 was incorporated by reference.

This change to § 40.13(c)(6) is a nonsubstantive amendment. It is intended to clarify an essential requirement for exempt use of uranium shielding in shipping containers.

This final rule contains no new or amended requirements for recordkeeping, reporting, plans or procedures, applications, or any other type of information collection.

Since the following amendment clarifies an ambiguity existing in the NRC's regulations without imposing any additional substantive requirement, the Commission has determined that good cause exists for omitting notice of proposed rulemaking and public procedure thereon as unnecessary. For these same reasons, the Commission has found that good cause exists for making the amendment effective immediately upon publication in the **Federal Register.**

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to Title 10, Chapter I, Code of Federal Regulations, Part 40, is published as a document subject to codification.

47 FR 8
Published 1/4/82
Effective 1/4/82

10 CFR Parts 40, 70, and 150

Submittal of Installation Information Pursuant to US/IAEA Safeguards Agreement

AGENCY: Nuclear Regulatory Commission.

ACTION: Final Rule.

SUMMARY: The Commission is amending 10 CFR Parts 40, 70 and 150 to relieve applicants for licenses of the requirements to submit installation information. This information provides a detailed description of the licensee's physical plant and methods for the control of nuclear material relative to the IAEA safeguards inspection program. Presently all applicants are required to provide installation information irrespective of selection by the IAEA. The amendments will permit the Commission to request installation information of a license applicant if it deems for a particular case that the information is needed in accordance with the US/IAEA Safeguards Agreement.

EFFECTIVE DATE: January 4, 1982.

FOR FURTHER INFORMATION CONTACT: Mr. J. M. Branscome, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC. 20555 (301–443–5976).

SUPPLEMENTARY INFORMATION: The US/IAEA Safeguards Agreement entered into force on December 9, 1980. Notice of entry into force was published in the **Federal Register** on December 24, 1980, 45 FR 84967, at which time the Commission's implementing regulations became effective.

Under the Agreement and regulations, the IAEA has the right to apply safeguards to licensees listed on the United States eligible list, as defined in 10 CFR 75.2(b). In order to assure that a licensee on the U.S. eligible list could be visited and inspected by the IAEA promptly after listing, NRC regulations provided that certain applicants for a license to possess and use source material and special nuclear material should file specified information with NRC at least 9 months prior to the date when the applicant desires to receive the material (or earlier upon request by the Commission). The Commission explained in the **Federal Register** on May 25, 1978, 43 FR 22368, that this procedure was necessary to enable IAEA to place its control procedures in force before nuclear material is received. The Commission noted on July 17, 1979, 44 FR 41473, in reply to public comments, that the prelicensing review provisions would allow it, in cooperation with licensees, to avoid delays in the licensing process.

A further consideration of this issue has led the Commission to conclude, after consultation with the Department of State, that the prelicensing review provisions, at least for the time being, are unnecessarily burdensome on applicants for certain licenses.

The Commission has determined that it will be sufficient to require that an applicant submit installation information and permit verification of the information submitted only when specifically requested to do so by NRC. Ordinarily, the time between submission of an application and the issuance of a license would be more than adequate to enable an IAEA facility attachment to be negotiated in the interim. But even where this may not be the case, the Commission will have official knowledge of significant new installations, prior to commencement of construction, by virtue of the environmental report requirements in 10 CFR 40.32(e) (relating to the production of uranium hexafluoride and certain other activities) § 70.23(a)(7) (relating to processing and fuel fabrication, scrap recovery, conversion of uranium hexafluoride, and certain other activities). The Commission will be able to determine whether prelicensing review is needed and, if it is, to make an appropriate request in a timely manner.

Since there is no counterpart requirement to inform NRC of new operations in Agreements States, 10 CFR 150.17a has been amended to require advance notice from applicants located there. Then, instead of routinely requiring submission of installation information, the Commission would obtain it only when the Commission finds that there is a need for the information. The license applicant would be advised of the need for the information.

The promulgation of the amendments will not result in any activity that affects the environment. Accordingly, the Commission has determined, under the National Environmental Policy Act and the criteria of 10 CFR 51.5(d)(2) and (3), that neither an environmental impact statement nor an environmental impact appraisal to support a negative

declaration for the amendments to 10 CFR Parts 40, 70, and 150 is required.

Because these amendments relate solely to minor procedural matters and are solely for the purpose of relieving licensees of existing requirements, notice of proposed rulemaking and public procedure thereon are unnecessary. Because the rule relieves persons of existing restrictions, it can be made effective immediately upon publication.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 40, 70, and 150 are published as a document subject to codification.

47 FR 23138
Published 5/27/82
Effective 5/27/82

Regional Licensing Program

See Part 30 Statements of Consideration

47 FR 27060
Published 6/23/82

Regional Licensing Program; Correction

See Part 30 Statements of Consideration

47 FR 30452
Published 7/14/82
Effective 10/12/82

Protection of Employees Who Provide Information

See Part 19 Statements of Consideration

47 FR 57446
Published 12/27/82
Effective dates:
10 CFR 20.311 of Part 20 effective date is 12/27/83; 10 CFR Part 61 and all other changes effective 1/26/83.

Licensing Requirements for Land Disposal of Radioactive Waste

See Part 61 Statements of Consideration

48 FR 16030
Published 4/14/83
Effective 4/1/83

Regional Licensing Program; Further Implementation

See Part 30 Statements of Consideration

≫ 48 FR 32324

Published 7/15/83

Effective 8/15/83

Amendments Specifying Licensee Responsibility for Nuclear Materials and Procedures for Termination of Specific Licenses

See Part 30 Statements of Consideration

≫ 48 FR 33697

Published 7/25/83

Effective 7/25/83

10 CFR Part 40

Suspension of Exemption Permitting Use of Glass Enamel and Glass Enamel Frit Containing Small Amounts of Uranium

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule; suspension.

SUMMARY: The Nuclear Regulatory Commission (NRC) is suspending its regulations that provide for an exemption from licensing requirements applicable to the possession and use of source material. The suspended exemption covers glass enamel and glass enamel frit containing small amounts of source material. The NRC plans to reevaluate the exempt use of glass enamel and glass enamel frit containing uranium on consumer products such as cloisonne jewelry. The suspension is intended to prohibit further increase in the circulation of cloisonne jewelry containing uranium until the NRC completes its final action following the reevaluation.

EFFECTIVE DATE: July 25, 1983.

FOR FURTHER INFORMATION CONTACT: Dr. Anthony N. Tse, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555 (301–443–5825).

SUPPLEMENTARY INFORMATION: On January 25, 1983 the New York State Department of Health announced that it had found some pieces of cloisonne jewelry to be radioactive. The radiation was a result of the uranium used to produce golden-yellow and beige colors in the brightly colored glass enamel of the jewelry. Available information indicates that all of the cloisonne jewelry found to contain uranium has been imported. There is no known manufacturer in the United States.

The addition of various uranium salts to glass enamel dates back at least to the early part of this century. Uranium salts are used in only a few enamels to obtain certain colors.

The use of uranium in glass enamel or glass enamel frit is permitted under the NRC's regulations in 10 CFR Part 40. On November 17, 1964, the NRC's predecessor, the Atomic Energy Commission (AEC), published a final rule (29 FR 15363) that exempted from licensing requirements the receipt, possession, use, transfer or import of source material contained in glass enamel and glass enamel frit containing not more than 10 percent by weight of source material. In promulgating that rule, the AEC recognized the long-standing use of uranium to produce colors in glass enamel and stated that "By reason of the low amount of radiation from glass enamel and glass enamel frit and the short period of time a person would use or be near such material, resultant external radiation exposure to the user would be only a small fraction of the limits recommended by the Federal Radiation Council or the International Commission on Radiological Protection."

However, the AEC's evaluation may not have considered the use of uranium frit in jewelry worn next to the skin. A person might wear a piece of cloisonne jewelry, such as a pendant suspended from a neck chain, in contact with his or her skin for relatively long periods of time. Distribution of the cloisonne jewelry may also be on a wider scale than the AEC anticipated for products using frit.

After the announcement by the State of New York, other States and the NRC examined thousands of pieces of jewelry. A radiological analysis of the cloisonne jewelry was performed by the Department of Energy's Radiological and Environmental Sciences Laboratory located in Idaho Falls, Idaho. Based on this analysis and other information from NRC's Regional Offices and the States, the NRC has conducted a radiological assessment of the use of cloisonne jewelry by consumers. Among the conclusions of this assessment were: (1) About 10 percent of the cloisonne jewelry is radioactive as a result of the uranium content in the glass enamel; (2) measurements performed for the NRC of pieces containing uranium in the enamels indicated that uranium content was in the range of 3 to 7 percent by weight; (3) the radiation dose rate at contact with the surface of the jewelry enamel was measured to range from 3 to 7 millirems per hour (primarily beta radiation) but the dose rate decreases rapidly with distance from the surface of the jewelry; (4) there was no removable radioactivity detected on any sample; and (5) the risk to individuals wearing the jewelry is within acceptable boundaries.

A piece of cloisonne jewelry worn with the radioactive enameled surface

in contact with the skin for 520 hours per year (10 hours/week, 52 weeks/year) would deliver a dose of about 2,000 to 4,000 millirems to a small area of skin in a year. This corresponds to a skin cancer incidence risk of 2 to 4 in a million. The risk of death from these skin cancers is much lower than the incidence of skin cancer. When the radioactive enameled surface of the jewelry is not in direct contact with the skin, the dose to a small area of skin from wearing the jewelry 520 hours, would be less than 25 millirems.

Although the use of cloisonne jewelry containing uranium does not constitute an immediate or significant health hazard, the NRC believes the use of the jewelry could constitute an unnecessary exposure to radiation. This view is based on the principle that there should not be any man-made radiation exposure without the expectation of benefit resulting from the exposure. Further, the NRC and AEC policy on the "Use of Byproduct Material and Source Material—Products Intended for Use by General Public" (30 FR 3462, March 16, 1965) considers that the use of radioactive material in toys, novelties, and adornments may be of marginal benefit. On April 24, 1969, the AEC denied a petition for rulemaking requesting that cufflinks made from depleted uranium be exempt from licensing requirements (34 FR 6870). In denying the petition, the AEC stated that the use of depleted uranium in adornments such as cufflinks would result in a small increase of radiation exposure among the general public without commensurate benefit. Therefore, the NRC plans to reevaluate the exemption that permits the use of uranium in glass enamel and the use of the glass enamel on an end product such as jewelry.

During the period of reevaluation, the NRC believes it prudent to prohibit further increase in the circulation of cloisonne jewelry containing uranium. Therefore, the NRC is suspending the exemption in 10 CFR 40.13(c)(2)(iii) pertaining to glass enamel and glass enamel frit. The suspension will be terminated at the completion of the final NRC action following the reevaluation of the exemption or on June 30, 1985, whichever comes first.

Except as noted below, after the effective date of the suspension: (1) Manufacturers may not commercially distribute materials covered under 10 CFR 40.13(c)(2)(iii) pertaining to glass enamel and glass enamel frit to persons not licensed to possess radioactive material, and (2) importers may not import for commercial distribution glass enamel, glass enamel frit covered in the suspended paragraph, or products containing enamel such as cloisonne jewelry (10 CFR 110.11), except for products ordered for importation before the suspension date.

However, this suspension does not apply to persons who receive, possess, use or transfer radioactive glass enamel and glass enamel frit, or products containing these items imported or ordered for importation into the United States, or initially distributed by manufacturers in the United States, before the effective date of the suspension. Therefore, persons who possess these items imported or ordered for importation, or initially distributed by such manufacturers before the effective date of the suspension will continue to be exempt from licensing requirements, and may possess, sell and transfer these items without a license.

It should be noted that the NRC's jurisdiction extends only to items to which uranium or thorium have been added. Pieces of cloisonne jewelry that do not contain uranium or thorium may be imported and distributed in the normal course of business.

The suspension is necessary to prohibit further importation of cloisonne jewelry containing uranium into the U.S. for commercial distribution, thus avoiding additional exposure to the public pending the NRC's reevaluation of the exemption. Because this action must be taken expeditiously to be fully effective, the NRC has found that good cause exists for omitting notice of proposed rulemaking and public procedure thereon as impracticable and contary to the public interest and has found good cause for making the amendment effective upon publication in the **Federal Register** without the customary 30-day notice.

Paperwork Reduction Act Statement

This final rule contains no information collection requirements and therefore is not subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

Regulatory Analysis

The NRC has prepared a regulatory analysis on this final regulation. The analysis examines the costs and benefits of alternatives considered by the NRC. The analysis indicated that the economic impact, including impact to small entities, of this suspension is very small. The analysis is available for inspection in the NRC Public Document Room, 1717 H Street NW., Washington, D.C. Single copies of the analysis may be obtained from Dr. Anthony N. Tse, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (301–443–5825).

List of Subjects in 10 CFR Part 40

Government contracts, Hazardous materials—transportation, Nuclear materials, Penalty, Reporting requirements, Source material, Uranium.

The authority citation for this document is: Sec. 161b., Pub. L. 83–703, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); Sec. 201, Pub. L. 93–438, 88 Stat. 1242, as amended (42 U.S.C. 5841).

PART 40—[AMENDED]

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended and 5 U.S.C. 552 and 553, the following amendment to 10 CFR Part 40 is published as a document subject to codification.

48 FR 34416

Published 7/29/83

10 CFR Parts 40 and 70

Amendments Specifying Licensee Responsibility for Nuclear Materials and Procedures for Termination of Specific Licenses

Correction

In FR Doc. 83–19169 beginning on page 32324 in the issue of Friday, July 15, 1983, make the following corrections:

1. On page 32328, the third column, in § 40.42(b), the tenth line, "(b)" should read "(v)".

2. On page 32329, the middle column, in the authority citation for Part 70, the second paragraph, the third line, "sec. 12," should read "sec. 122,"

≫48 FR 35350
Published 8/4/83
Effective 9/6/83

10 CFR Part 40

Uranium Mill Tailings; Suspension of Selected Provisions

AGENCY: Nuclear Regulatory Commission.

ACTION: Final suspension of regulations.

SUMMARY: The Nuclear Regulatory Commission is suspending selected portions of its regulations dealing with the disposal of uranium mill tailings. The provisions suspended are those which would be affected by recently published proposed Environmental Protection Agency (EPA) standards for protection of the environment from these wastes. The result of the suspension will be to place in abeyance certain Commission regulations that could have a significant cost impact on its licensees if the regulations are implemented before the Commission makes the anticipated rule changes necessary to conform the regulations to the EPA standard when it is finalized. The proposed suspension was published for public comment and comments received have been considered in this final action. This action is necessary to comply with recently enacted legislation.

EFFECTIVE DATES: The suspension is effective from September 6, 1983 until April 1, 1984 or the effective date of a final rule which would change Appendix A to conform to final EPA standards, whichever comes first.

FOR FURTHER INFORMATION CONTACT: Robert Fonner, Office of the Executive Legal Director, telephone (301) 492–8692, or Kitty Dragonette, Low-Level Waste Licensing Branch, Division of Waste Management, NMSS, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 427–4160.

SUPPLEMENTARY INFORMATION: Section 18(a) of Pub. L. 97–415, the Nuclear Regulatory Commission Authorization Act for fiscal years 1982 and 1983, requires the Commission to suspend the implementation and enforcement of certain provisions of its regulations on uranium mill licensing promulgated as final rules on October 3, 1980 (45 FR 65521–65538). The portions of the Commission's regulations required to be suspended are those that would require a major commitment or major action by licensees which would be unnecessary if (1) the EPA proposed standards are promulgated in final form without modification, and (2) the Commission's regulations are modified to conform to the EPA standards. Under the legislative scheme, the suspension is a precursor to subsequent modification of the Commission's regulations. A prime objective of the suspension is to avoid a situation in which a licensee might undertake a major commitment that would not be required after a subsequent Commission rulemaking that would modify the October 3, 1980 regulations.

On April 29, 1983, the EPA published its proposed environmental standards for uranium mill tailings at licensed commercial processing sites. *See* 48 FR 19584. On May 26, 1983, the Commission published its proposed suspension of portions of Appendix A to 10 CFR Part 40 (*see* 48 FR 23649) for public comment. Copies of all comments received may be examined at the Commission's Public Document Room, 1717 H Street NW., Washington, DC.

Discussion of Comments

Overview

Eleven persons submitted comments on the proposed suspension. Comments were received from three states (Wyoming Department of Environmental Quality, Colorado Department of Health, and the Governor of Utah), four industrial groups (Kerr-McGee Corporation, Kerr-McGee Nuclear Corporation, Homestake Mining Co., and United Nuclear Corporation (hereafter referred to as Kerr-McGee et al.), American Mining Congress, Federal-American Partners, and Ebasco Services, Inc.), and four public interest groups (Sierra Club, Environmental Policy Institute, Southwest Research and Information Center, and Coalition for Nuclear Power Postponement).

The general thrust of the comments from the states and public interest groups was that the proposed suspension was unnecessary, too comprehensive, or based or erroneous legal interpretations. The Federal-American Partners were also opposed to the suspension but their view was based on opposition to the EPA standard. Ebasco commented on risk methodology. The other two industrial groups generally favored suspending more of Appendix A.

The principal conclusions reached in analyzing the comments are that the proposed approach is valid and legal, that the nature of the suspending action is misunderstood in some cases, and that only minor changes from the proposed action are warranted in light of comments received. Specifically, only the proposed action on two requirements of Criterion 6 have been changed. The fourth sentence, prohibiting licensees from taking credit for thin synthetic layers to reduce radon flux, is not suspended as proposed. The general requirement in the fifth sentence to evaluate long-term performance of cover materials is retained but with minor phrases suspended.

The following discussion summarizes the major issues raised by the commenters, analyzes those issues, and indicates changes made in the portions of the regulations that are suspended. The issues have been grouped into the following general areas: (1) comments on the commission's approach as presented in the proposed notice, (2) suggestions on specific suspension items, (3) views of the Commission's rules in Appendix A and the proposed EPA standard, and (4) other.

Comments on Commission Approach

In the proposed suspension, the Commission outlined the key elements of its approach to the action. The elements included an approach to the question of suspending regulations based upon as assumption regarding major commitment, consideration of both more and less restrictive provisions in the proposed EPA standard, disregard of options for case-by-cases exemptions in the EPA proposal, and a literal approach to consider both the EPA standards and the NRC regulations as written.

A number of commenters (State of Wyoming, Sierra Club, Environmental Policy Institute, and Southwest Research and Information Center) believe that the Commission should not have undertaken to suspend any part of Appendix A because no determination was made that implementation of the affected regulations, within the time frame of the suspension, would result in a major action or major commitment by its licensees. In essence these commenters take issue with the approach used by the Commission in proposing certain section of Appendix A for suspension.

The Commission's approach, as described in the proposed suspension, was based on an assumption that any licensee may at any time implement any part of the rule, or use any part of it in siting or design efforts, and that such use or implementation of the rule may result in major commitment of resources on the part of the licensee. The Commission's use of these assumptions is, it believes, reasonable, as noted in the discussion of its approach in the proposed suspension (48 FR 23639, 23650–1), and supported by both the terms of the legislation (Pub. L. 97–415, section 18(a), section 275f.(2) of the Atomic Energy Act of 1954, as amended) and the legislative record.

The legislation itself is clear and unambiguous. Under it the Commission *shall* suspend implementation and enforcement of *any* provision of Appendix A which the Commission determines requires a major action or major commitment by licensees which would be unnecessary if:

(A) the standards proposed by the Administrator are promulgated in final form without modification, and

(B) the Commission's requirements are modified to conform to such standards.

Conforming action is mandated (sec. 275.f(3) of the Atomic Energy Act of 1954, as amended). The legislative record [1] underscores that focus of the statute is on the potential of the regulation to bring about a financial obligation or expenditure. In House Report 97–884, the conferees note that the term "commitment" may include financial obligations or expenditures that might be required (H. Rept. 97–884, p. 46). Further, the determination is to be made based upon a review and analysis of the Commission's regulations and EPA's proposed active site standards as soon as the latter are published (*id.*, p. 46). It is a reasonable inference from this record that the determination does not require a survey of licensees to determine their corporate intentions, but may be based upon a comparison of the NRC regulation to the EPA proposal, and is to be completed within three months. Accordingly the Commission is adhering to its initial approach to the scope of the suspension. The Commission believes this approach is justified in light of the short statutory deadline for the required suspension action and the Commission's continuing authority to regulate uranium mill tailings disposal on a case-by-case basis until final EPA standards are issued and the Commission had adopted conforming changes to its regulations.

Two commenters (Sierra Club, Environmental Policy Institute) took issue with the Commission's characterization of the suspension under the legislation as a precursor to subsequent modifications of the NRC regulation, noting that nothing in the legislation mandates modification of the NRC regulations.

The comment is correct insofar as it relates to independent NRC action not predicated upon EPA rulemaking. However, in the event of a timely EPA rulemaking the statute is clear. Section 275f.(3) of the Atomic Energy Act of 1954, as amended, states "(3) Not later than 6 months after the date on which the Administrator promulgates final standards pursuant to subsection b. of this section, the Commission shall, after notice and opportunity for public comment, amend the October 3 regulations, and adopt such modifications, as the Commission deems necessary to conform to such final standards of the Administrator." (Emphasis supplied.) As noted eralier, the same statute required the Commission to suspend upon the assumption that EPA's proposed standards will also be the final standards. Accordingly, in the circumstances of this suspension it is not incorrect to characterize the suspension as a precursor to modification of the rules.

Two commenters (American Mining Congress and Kerr-McGee et al.) assert that the Commission should suspend all of Appendix A to 10 CFR Part 40, not just selected portions, on the ground that all of the Commission's regulations are arbitrary, unsupported and not reasonably related to cost of implementation. This assertion by the commenters is totally consistent with the position asserted by them in litigation with the Commission over the rules in question.

Needless to say, the Commission does not agree that any of 10 CFR Part 40, Appendix A is arbitrary, capricious or without support. The suspension of any portion of Appendix A should not be taken to infer any shortcoming in either the substance of the suspended portion or in the manner of its promulgation as a final rule. The suspension indicates no more than a deferral to authority given EPA to set general environmental standards under the terms of section 275 of the Atomic Energy Act of 1954, as amended, and the statutory need of NRC to conform to those standards. The conferees expressly stated that the amendments to the Atomic Energy Act giving rise to this suspension were not to affect, in any way, any ongoing litigation involving the validity of the Commission's rules. *See id.*, p. 47. Indeed, the conferees specifically rejected the notion that NRC in any way acted improperly in promulgating the regulations prior to EPA action. *Id.*

The Commission believes that much of the concern expressed by some of the commenters stems from misunderstanding the nature of the suspension and from its implications for future action. In the proposed notice the Commission noted that the suspension is "a precursor to subsequent modification of the Commission's regulations." Thus commenters may be concerned that the anticipated conforming changes will involve actually deleting the suspended provisions. That is not a necessary result. The Commission intends to study the significance of these differences further. Thus, the Commission's proposed suspension should be viewed as preliminary judgments subject to further review. In addition, a factor in the Commission's approach was the apparent lack of flexibility in the existing rule. The proposed notice stated "Even where the suspended portions of Appendix A do not represent an essential on preferred means of satisfying the final EPA standards, the conforming changes ultimately adopted by the Commission may only need to provide licensees additional flexibility beyond that provided in Appendix A." For example, conforming changes may simply involve word charges, such as replacing "shall" with "should," and language requiring serious consideration of below grade disposal in place of "the prime option" language.

Moreover, these suspension decisions represent only a very preliminary review of the differences between the proposed EPA standards and the NRC regulations. In its further consideration of conforming changes in Appendix A, the Commission may well conclude that, as a practical matter, the differences between the NRC and EPA standards do not affect all those portions of the siting and design requirements in Appendix A proposal for suspension. The Commission may well conclude, for example, following further review that some or all of the suspended portions of Appendix A represent the preferred method for satisfying the final EPA standards. Even the suspended portions of Appendix A do not represent an essential or preferred means of satisfying the final EPA standards, the conforming changes ultimately adopted by the Commission may only need to

[1] House Report 97–884 is not an official legislative history since it was rejected by the House on December 2, 1982. It is available, however, for reference on the intentions of the conferees. *See* Cong. Rec. S 15314, December 16, 1982.

provide licensees additional flexibility beyond that provided in Appendix A.

Industry urged that the Commission take into account the provisions in the EPA proposal to exempt operators from the liner requirement and the nondegradation ground water requirement. However, the Commission continues to believe that regulatory standards should not be based on exemptions.

The language in both the Commission's rules and the EPA proposal does not always clearly indicate which provisions are requirements and which are design objectives or goals. The proposed approach included considering the literal meaning rather than the intent of both rules. The Commission continues to believe that the literal approach provides the clearest direction to licensees on matters where the two rules differ.

Arguments that the suspension is not needed were fairly general. They varied from views that sufficient flexibility exists in Appendix A to accommodate the EPA proposal (Wyoming and Colorado) to questions on agency authorities and interpretation of the legislation. The Sierra Club expressed the view that the Commission had wrongly interpreted the legislation to define a " 'new' relationship with EPA" and that the Commission rule and authority have primacy. The Sierra Club advocated fighting for the agency's regulatory independence. The Environmental Policy Institute also focused on the Commission's separate authority and responsibility. The Institute also expressed the view that the legislative intent was to preserve the Commission's rules and only suspend those portions absolutely necessary.

The American Mining Congress (AMC) concluded that the collective legislative intent would lead to the suspension of all of Appendix A. The AMC stated that both the Commission and EPA have been mandated by Congress to reevaluate regulations and issue only regulations that are reasonably related to risk and cost of compliance. The AMC also challenged EPA's authority to set requirements inside an NRC licensed restricted area. In particular, the AMC expressed the view that the ground water provisions are not "generally applicable standards" and therefore improper for EPA to establish. The Commission recognizes that there is an ambiguity in Reorganization Plan No. 3 of 1970 (84 Stat. 2086) as to where to draw the line on exercising EPA and NRC authority. However, for uranium mill tailings, we are dealing with subsequent legislation in section 275 of the Atomic Energy Act, as amended, which does not appear to draw the distinction referred to by the AMC. Second, in terms of the limited purpose of this suspension, the Commission does not believe it appropriate or necessary to take issue in this action with EPA over the boundaries of its jurisdiction. The Southwest Research and Information Center also raised the issue of the Commission's legal responsibilities under Title II of the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA) claiming that the EPA proposal cannot set those responsibilities aside. The Federal American Partners also stated "the Nuclear Regulatory Commission (NRC) should not suspend their regulations in favor of those proposed by the EPA," but did not elaborate a legal basis for this statement.

Comments on Specific Suspension Items

Four commenters, Kerr-McGee et al., Southwest Research and Information Center (the Center), the Colorado Department of Health, and the Governor of Utah offered comments on specific suspension items. The comments addressed the scope and the reasons for suspension. The following discussion tracks the criteria in Appendix A and the numbering system in the proposed suspension.

Criterion 1—1.(a) The Center suggested not suspending the words "for thousands of years" and Colorado and the Center suggested not suspending "without ongoing active maintenance." The Center argued that the practical difference between the NRC and EPA language does not represent a "major" commitment by licensees. Colorado stated that the two agencies really have the same intent and there is no conflict. Kerr-McGee et al. supported the suspension. The Governor of Utah voiced opposition to reliance on active maintenance and the shorter EPA effective time. The temporary suspension of the flat prohibition against all planned maintenance is necessary for consistency with the EPA standard, which would not prohibit planned maintenance where it is a cost-effective alternative. In the *Commission Approach* section of the proposed suspension, the judgmental nature of the language differences and the difficulties in determining "major commitments" were acknowledged. The preceding discussion of comments reviews these issues again. Based on the information at hand and in anticipation that conforming changes will further clarify the differences in the two rules, the suggestions were not adopted.

1.(b) Kerr-McGee et al. objected to suspension of the word "usable" based on objections to the fact that the EPA standard does not take aquifer use into account. The commenter did not provide a basis for his arguments based on differences in the two rules. The Governor of Utah supported suspension and agreed with the EPA position. Kerr-McGee et al.'s suggestion was not adopted.

Kerr-McGee et al. also suggested suspending the next to last paragraph of Criterion 1 beginning "In the selection of disposal sites . . ." on the basis that site considerations should not take precedence over engineering and design considerations. This suggestion was based on cost-effective and cost justified arguments and the view that the requirement is unnecessary in view of the 200–1,000 year EPA standard. Since siting only applies to new sites or new disposal areas, and in light of the uncertainties associated with relying on engineering measures for even 200 years, the arguments are not convincing and the suggestion was not adopted.

Criterion 3—Kerr-McGee et al. supported suspension of Criterion 3. The Center, Colorado, and Governor of Utah each suggested not suspending Criterion 3 in its entirety. The Center's arguments on Criterion 1 were referenced and the Center expressed the view that UMTRCA language to minimize and, to the maximum extent practicable, eliminate maintenance dictates that the Commission not implement the less stringent language of the EPA standard. The Governor of Utah expressed strong support of below-grade disposal and exceptions on a proven case-by-case basis. As the Commission noted in its reasons for proposed suspension, both agencies have concluded that below-grade disposal is an excellent way to minimize maintenance. However, below-grade disposal is not necessary to meet EPA's proposed longevity requirement. The proposed suspension is necessary for consistency with EPA's proposal and makes it clear that below-grade or equivalent disposal is not mandated in all cases, particularly for existing tailings piles. The Commission continues to believe that the conservative literal approach to the language in the two rules best serves the purpose of the suspension. Thus Criterion 3 is being suspended in full.

Criterion 4—The Center and the Governor of Utah advocated leaving Criterion 4 intact and not to suspend any provisions. Kerr-McGee et al. supported all the proposed suspensions. The Center commented that NRC should suspend only those features for which

NRC has data or information that conclusively shows that they "will not" be required to meet the EPA standard and rejects the Commission's "may not" be needed approach. In the proposed suspension, the Commission noted that ongoing studies are addressing this issue and the Commission is not prepared to reach a final technical conclusion on this matter. The Commission continues to believe that suspending provisions that stemmed from the longer timeframes in the Commission's rule is prudent. The Center also repeated their position on explicitly proving "major" commitments. The Center noted that many of the suspended features were included in EPA's supporting documents and are good ways to meet the EPA proposed standards. However, the Center does not address the lack of flexibility the Criterion includes which is at the heart of the Commission's proposed action. The requirements are acknowledged to be good ways to meet the EPA standard but they may not be the only and necessary way. The Governor of Utah argued that exemptions to the requirements in Criterion 4 should be made only on a case-by-case basis. The Governor's position stems from advocating stability and effective controls for "at least 1,000 years" and his dissatisfaction with the proposed EPA standard. The Commission is mandated to compare its regulations to the proposed EPA standard and the suspension must be based on the standard as proposed. The Criterion 4 provisions proposed for suspension are included in the final action.

Criterion 5—4.(a) Kerr-McGee et al. objected to suspension of the sentence "Any seepage which does occur shall not result in a deterioration of existing ground water supplies from their current or potential uses," based on their interpretation of the proposed EPA standards. Kerr-McGee et al. assert that the EPA standards allow seepage. In explaining its approach, the Commission noted that its proposed suspension was based on the EPA standard as written without regard to the provisions or options for exemptions. The no seepage requirement is presented as EPA's primary performance standard and design standard. If subsequent events indicate that this standard is not met, the secondary ground water quality standards come into play. The ground water standards would allow some degradation of ground water to the specified limits or to other limits if remedial actions cannot restore the ground water and EPA approves an exemption. Since compliance with the suspended sentence requires an exemption from EPA, the Commission continues to believe it prudent to suspend it.

4.(b) Kerr-McGee et al. objected to the proposed suspension of the items in the second paragraph of Criterion 5 based on a reading that the words remaining required liners when the EPA standard does not. First, the words remaining do not require liners—only that installation be considered. Second, the Commission views the no liner provision for other than existing impoundments in the EPA standard as an exemption. Section 264.221 of 40 CFR Part 264 requires case-by-case approval and determination that "alternative design and operation, together with location characteristics, will prevent the migration of any hazardous constituents into the ground water or surface water at any future time." Certainly suspension of the sentence was not intended to require Kerr-McGee et al. to move existing tailings to a lined impoundment and the Commission does not see how Kerr-McGee et al. reached this conclusion. Kerr-McGee et al. proposed that the entire paragraph be suspended. Since it applies to both existing and future impoundments, the Commission continues to believe that liners should be considered and that the remaining language in the proposed suspension is consistent with the EPA standard.

Kerr-McGee et al. also suggested suspending the paragraph beginning "The characteristics of the underlying soil . . ." and ending ". . . various formations shall be determined." Kerr-McGee et al. assert that it is "difficult and even infeasible to characterize groundwater conditions in a uranium district." For several reasons, the Commission does not believe this requirement should be suspended. First, it is not in conflict with the EPA standard. Under the EPA scheme, licensees must monitor aquifers at the down gradient edge of the impoundment. This requirement cannot be met without some knowledge of the geohydrology of the site. Second, evaluation of liner failure modes requires site-specific information and is important to NRC licensing decisions including evaluation of monitoring programs and remedial action plans.

4.(e) Kerr-McGee et al. objected to suspension of "usable" for the same reasons discussed earlier. The Governor of Utah supported the suspension. The Commisson still believes the EPA proposed standard dictates suspension.

Kerr-McGee et al. also suggested that the last paragraph on managing stockpiles in Criterion 5 be suspended based on the absence of EPA requirements on stockpiling. While it is true that the EPA standard does not specifically address stockpiling (note that ores are not waste and thus not byproduct material so the EPA standard should not address stockpiling) and includes cleanup limits for after-the-fact application, as Kerr-McGee et al. note, the Commission fails to see how the EPA standard would affect this provision. Preventing extensive cleanup or excavation of storage areas and potential spread of contamination are important mitigating actions to minimize impacts of mill operation. Reliance on extensive cleanup would require commitment of more funds for decommissioning and involve large uncertainties. Thus the requirement was not suspended.

Criterion 6—5. (a) The Center objected to suspending the numerical values for cover thickness and radon flux. Kerr-McGee et al. supported this suspension. The principal argument the Center presented focused on the commenter's application of the "major commitment" test. The Center noted that EPA analyses indicated that 2–3 meters cover would usually be required to meet the EPA flux limit and that implementation of the two rules would therefore involve essentially the same cover cost. The Commission disagrees and considers that obtaining or producing detailed cost estimates are not necessary as discussed under *Commission Approach* and in preceding sections of this notice. The key to the Commission's proposed suspension was that 3 meters of cover may not always be required. Suspending the numerical value allows case-by-case evaluation so that licensees can consider a full range of alternative designs and plans.

The Center also asserted that the costs of complying with a 2 vs 20 picocurie/meter^2•sec radon flux were not "major" when compared to total costs of construction and 30-year operation of a mill. "Major" is a very subjective decision and even a few thousands of dollars for engineering design contract work could be "major" to a nonoperating plant with no current income from sales. The Center's suggestions on these two points were not adopted.

Kerr-McGee et al. recommended that the sentence "Direct gamma exposure from the tailings or water should be reduced to background levels." be suspended. Reasons included no EPA criterion on direct gamma exposure and reliance on institutional control of access to limit exposures. Kerr-McGee et al. conceded that 2 feet of soil or rock

to control erosion would achieve background. The background level for gamma exposures is not inconsistent with the EPA standard. The Commission believes that excessive reliance on institutional controls should be limited. Further, in the sentence "should" is permissive and does not mandate background in all cases. The suggestion was not adopted.

5.(b) Both Colorado and Utah objected to suspending the sentence prohibiting reliance on thin synthetic layers in calculating radon flux. The two states share NRC and EPA reservations about the longevity of thin synthetic layers. Kerr-McGee et al. supported suspension. Given the current state-of-the-art and information available, the Commission still has reservations about relying on synthetic liners for 200 or more years and also concedes that for at least the duration of the suspension, licensees could not practically take advantage of the flexibility to consider thin synthetic layers and therefore adopts the States' suggestion not to suspend.

5.(c) Colorado and the Center expressed the view that the sentence requiring long-term performance evaluation of non-soil cover materials should be retained. Kerr-McGee et al. supported the suspension to foster new technology. Colorado agreed that the 3 meter language should be suspended. Commenters noted that even 200 years is a long time and materials should be evaluated for long-term performance. The Commission believes the State's point is well taken and the final suspension includes suspension of only parts of the sentence. Specifically, the words "to reduce tailings covers to less than three meters" are suspended as recommended by the State and also the words "cracks or" are suspended to make the evaluation less oriented to radon flux, a point made by Kerr-McGee et al.

5.(d) Colorado objected to suspension of the requirements on radium levels of near-surface cover materials. Kerr-McGee et al. supported the proposal. While the Commission would hope that most licensees could use background level materials, footnote 7 of the EPA standard states "Radon emissions from the covering materials should be estimated as part of developing a closure plan for each site." This language clearly indicates that flexibility is intended in choosing cover materials under the EPA standards. Thus the Commission must reject the suggestion not to suspend.

Criteria 7—11. Kerr-McGee et al. objected to a number of provisions in these criteria but none of the arguments were based on the direction in the legislative mandate for this suspension. Therefore, none of the suggestions were adopted.

Criterion 12—6. The Center and Utah objected to suspension of the sentence concerning ongoing active maintenance, restating their views that final disposition should not depend on ongoing active maintenance. Both expressed the view that sites can and should be designed so that maintenance is not required. The suspension does not mean that the Commission favors active maintenance—only that the degree of flexibility provided by the EPA standard should be provided. The proposed suspension was retained.

Views on Appendix A and EPA Standard

Many of the points made by the commenters stemmed from dissatisfaction with the proposed EPA standard or the NRC's rules in Appendix A to 10 CFR Part 40. Some submissions such as the second filing from Wyoming and the comments from the Coalition for Nuclear Power Postponement, Ebasco, and Federal-American Partners raised no issues directly related to the present action. Kerr-McGee et al. and the American Mining Congress articulated previously filed views on Appendix A. Where the comment itself was directed at one of the rules or where the only rationale for a suggested change in suspended provisions was disagreement with one or both of the two rules, the comment was not considered applicable to this action. The suspension action is based on the EPA and NRC rules as written and comparing the requirements in the rules as stated. Many of the comments may be useful to EPA and copies of all comments were provided to EPA. Others, such as Colorado, suggested changes that will need to be made in conforming Appendix A to the EPA standards. Colorado noted that Criterion 10 would have to be modified to cover the costs of active maintenance if it is to be relied on. Governor Matheson's (Utah) comments about planned reliance on active maintenance can be helpful in carefully wording conforming changes to allow flexbility, clearly identify goals, and preserve important regulatory requirements.

Other

The Governor of Utah recommended that the 20 picocurie flux standard for radon be made a performance standard involving actual measurements. However, the EPA standard is clearly intended as a design standard.

The discussion in the proposed suspension for the reason for suspending paragraph (a) of Criterion 4 included a discussion of Probable Maximum Flood (PMF). The discussion prompted responses from Kerr-McGee et al. and Utah. Kerr-McGee et al. objected to the Commission's clarifying discussion and asserted that the PMF is excessive and a 100-year flood is adequate. Utah supported the PMF design criteria. The rational discussion in the proposed suspension was an expression of views and is not binding. The comments do not affect the suspension.

The Ebasco comments advocated that both agencies use systems analysis and sensitivity analyses to evaluate the confidence levels in risk modeling and in discussion of rules. The comments had no direct application to the suspension action.

The State of Colorado would prefer clay liners required as mandatory backup for synthetic liners. As noted in the proposed suspension, the EPA proposal would allow both materials and the Commission agrees that such a backup is a good idea. However, this suspension action cannot accommodate adding such a requirement. Provisions can only be temporarily suspended.

NEPA Considerations

The Commission has determined that the suspension of specific portions of 10 CFR Part 40, Appendix A, as listed above does not involve a significant environmental impact and that no Environmental Impact Statement or Negative Declaration is needed for this action. The final suspension will be effective for a maximum of 6–7 months, ending April 1, 1984, at the latest. During this limited period of time, the Commission expects that any environmental consequences resulting from the suspension will be small due both to the fact that a short period of time is involved and the fact that the Commission may continue to regulate mill tailings on a case-by-case basis. Presently, the responsibility of each source material milling licensee to operate and dispose of waste in an environmentally sound manner is established on a case-by-case basis in the conditions of the license after the site-specific full environmental review. Any change in license conditions with significant environmental consequences, or issuance of a new license, will receive a full environmental review under 10 CFR Part 51 of the Commission's regulations.

Suspension of portions of Appendix A is not an amendment of Appendix A. Suspension is a temporary procedural measure which neither modifies nor relaxes the actual requirements in the

rule but only makes them inapplicable on a temporary basis, in accord with statutory guidelines. If and when substantive rule changes are proposed or promulgated, appropriate NEPA evaluations will be performed to support these actions.

Regulatory Flexibility Act

Since this suspension is not a rule change, the Regulatory Flexibility Act would not directly apply. Suspension has, however, the potential benefit of minimizing unnecessary licensee expenditure of resources by alerting licensees to those provisions of Appendix A that are either more or less restrictive than proposed EPA standards. Licensees can factor this notice into corporate plans and evaluations.

List of Subjects in 10 CFR Part 40

Government contracts, Hazardous materials-transportation, Nuclear materials, Penalty, Reporting requirements, Source material, and Uranium.

49 FR 9352
Published 3/12/84
Effective: Upon approval of OMB or 6/7/84.

Environmental Protection Regulations for Domestic Lincensing and Related Regulatory Functions and Related Conforming Amendments

See Part 51 Statements of Consideration

49 FR 19623
Published 5/9/84
Effective 5/9/84

Information Collection Requirements; Display of OMB Control Numbers

See Part 0 Statements of Consideration

49 FR 19630
Published 5/9/84
Effective 4/2/84

Regional Licensing Program; Further Implementation

See Part 30 Statements of Consideration

49 FR 21699
Published 5/23/84
Effective 5/23/84

Information Collection Requirements, Display of OMB Control Numbers

See Part 0 Statements of Consideration

49 FR 24512
Published 6/14/84
Effective 6/7/84

Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions and Related Conforming Amendments

See Part 2 Statements of Consideration

49 FR 24705
Published 6/15/84
Effective 7/16/84

Tritium and Source Material Reports

See Part 30 Statements of Consideration

49 FR 27923
Published 7/9/84
Effective 7/9/84

Application Consolidation to NRC Form 313; Application for Material License

See Part 30 Statements of Consideration

➢ **49 FR 35611**
Published 9/11/84
Effective 9/11/84

10 CFR Part 40

Glass Enamel and Glass Enamel Frit Containing Small Amounts of Uranium

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations to delete an exemption from licensing requirements applicable to the possession and use of glass enamel and glass enamel frit containing small amounts of source material thereby preventing the future domestic manufacture or importation of these materials without a specific NRC license. These materials are used to produce brightly colored surfaces on consumer products such as cloisonne jewelry. The rule is intended to prevent unnecessary radiation exposure that may be received by artists who use these materials or by consumers who use the products containing these materials. On July 25, 1983, the NRC suspended the subject exemption until this rulemaking action was completed.

EFFECTIVE DATE: September 11, 1984.

ADDRESS: Copies of the Regulatory Analysis may be examined at the NRC Public Document Room, 1717 H Street NW, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Dr. Anthony N. Tse, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 443–7902.

SUPPLEMENTARY INFORMATION: On April 30, 1984, the Nuclear Regulatory Commission published in the **Federal Register** (49 FR 18308) a notice of proposed rulemaking that would amend 10 CFR Part 40 to delete an exemption from licensing requirements for the possession and use of source material contained in glass enamel and glass enamel frit. These materials are used to produce brightly colored surfaces on consumer products such as certain types of cloisonne jewelry. The proposed rule provided a period of 60 days for public comment. Six comments were received.

The exemption from licensing requirements for the receipt, possession, use, transfer or import of source material contained in glass enamel and glass enamel frit (not more than 10 percent by weight of source material) was adopted by the Atomic Energy Commission, the NRC's predecessor, on November 17, 1964. Following the identification, in late 1982 and early 1983, of some pieces of cloisonne jewelry being distributed throughout the United States that contained uranium, the NRC adopted a final rule (48 FR 33697, July 25, 1983) suspending this exemption. Because available information indicated that all the cloisonne jewelry found to contain uranium has been imported, the suspension has had the effect of prohibiting the further importation of this jewelry.

Six public comments were received on the proposed rule. Two comments were from the public, one from industry, two from State agencies, and the other from another Federal agency.

Five comments supported the proposed rule. Most commenters stated that the proposed rule, if adopted, will prevent unnecessary exposure to radiation. One commenter was pleased to note that the Commission has concurred with a report by the Federal Radiation Council (FRC) stating "There should not be any man-made radiation exposure without the expectation of benefit resulting from the exposure." Another commenter stated that he can find no reason to deliberately incorporate radioactive materials into items of marginal or questionable benefit to anyone even though the risk is shown to be miniscule.

One comment opposed the proposed rule. The commenter stated that: (1) there are no scientific, technical or regulatory justifications for eliminating the current exemption; (2) if indeed there were a real health risk consideration associated with manufactured goods from the material, the proposed amendment would be

inadequate to address it, in that it does permit continued use of existing supplies and manufactured items; (3) furthermore, the NRC does not propose to remove the current exemption from licensing requirements for the possession, use, transfer or delivery of small quantities of source material or of goods containing various quantities of source material.

The NRC estimated that the radiological risk is expected to be 2 to 4 in a million for skin cancer incidence assuming an individual wearing the jewelry for about 520 hours per year. The NRC agrees that the use of the jewelry does not constitute an immediate or significant health hazard; thus the NRC did not prohibit the use, possession, or transfer of these materials or products that have already been distributed. However, the FRC guidelines approved by the President and the NRC's policy of making every reasonable effort to prevent unnecessary radiation exposures would provide sufficient justification to adopt the proposed rule even though the risk is small. On the comment concerning other exemptions currently provided in the regulations, each exemption was evaluated before it was adopted for exemption, except for certain long-standing uses of source material in products that antedate the atomic energy program. The NRC believes that the current regulations on consumer products are, in general, adequate to protect public health and safety. However, if any situations (such as the situation on cloisonne jewelry) arise that might cause NRC to reevaluate a specific exemption, the NRC will reevaluate that exemption. This will be done on a case-by-case basis.

One commenter asked: "Since the radiation consists mainly of beta particles, might not the metal mountings of the jewelry become radioactive, as well?" The metal mounting will not become radioactive from beta particles because beta particles cannot make other materials radioactive. The same commenter also suggested that the NRC issue a public statement to warn individuals of the presence of uranium in these enamels. The NRC did issue two public announcements on this subject: one on February 1, 1983 when the radioactive cloisonne jewelry was identified, and the other on July 25, 1983 when the exemption was suspended. Since the final rule merely codifies the suspension announced in July 1983, the NRC does not believe any further public statement is needed beyond this final rule.

After careful consideration of the comments on the notice of proposed rulemaking, the NRC has adopted the rule in final form, which is the same as the proposed rule. The final rule, effective upon publication in the **Federal Register**, prohibits receipt, possession, use, transfer and importation of glass enamel or glass enamel frit containing uranium unless specifically authorized by NRC. However, the rule continues to allow persons to receive, use, or transfer, without a license, glass enamel and glass enamel frit, or products containing these materials, imported or ordered for importation into the United States, or initially distributed by manufacturers in the United States, before July 25, 1983, the date of the suspension of this exemption.

The NRC's jurisdiction extends only to the source material contained in glass enamel or glass enamel frit. Glass enamel or glass enamel frit which does not contain uranium may be imported, manufactured, and distributed in the normal course of business without a NRC license.

The effects of the rule on the industry and the public are expected to be very small. Because of the continuing exemption of the glass enamel or glass enamel frit containing uranium already manufactured or imported, and the fact that there are now no manufacturers of these materials in the U.S., the economic impact, including the impact on small entities would be negligible. The economic impact of this amendment for importers is also expected to be very small because nonradioactive alternatives to the use of uranium in producing the desired colors exist.

Environmental Impact: Categorical Exclusion

The NRC has determined that this final rule is the type of action described in categorical exclusion 10 CFR 51.22(c)(2). Therefore, neither an environmental impact statement nor an environmental assessment has been prepared for this final rule.

Paperwork Reduction Act Statement

This amendment contains no information collection requirements and therefore is not subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

Regulatory Analysis

The NRC has prepared a regulatory analysis on this rule. The analysis examines the alternatives considered by the NRC. The analysis is available for inspection in the NRC Public Document Room, 1717 H Street NW, Washington, DC. Single copies of the analysis may be obtained from Dr. Anthony N. Tse, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 443-7902. The Commission requested public comment on the draft regulatory analysis and no comment was received.

Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act of 1980 5 U.S.C. 605(b), the Commission certifies that this rule will not have a significant economic impact upon substantial number of small entities. This final rule prohibits the future domestic manufacturing or importation of glass enamel or glass enamel frit containing uranium. Currently, no domestic manufacturer is producing glass enamel or glass enamel frit containing uranium. Furthermore, nonradioactive alternatives exist and are available to importers. As a result, the NRC believes that the economic impact of the rule on small entities or any other affected party will be negligible. The Commission requested public comment on the economic impact on small entities and one comment was received. The commenter stated that this rule would not affect any United States company since none currently make this product now.

List of Subjects in 10 CFR Part 40

Government contracts, hazardous materials-transportation, nuclear materials, penalty, reporting and recordkeeping requirements, source material, uranium.

Under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the following amendment to 10 CFR Part 40 is published as a document subject to codification.

49 FR 47823
Published 12/7/84
Effective 12/7/84

Minor Correcting Amendments

See Part 1 Statements of Consideration

≫50 FR 12221
Published 3/28/85
Effective date will be published at a later date.

10 CFR Parts 40, 70, 73, and 110

Implementation of the Convention on Physical Protection of Nuclear Material

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission has decided to amend its regulations to bring them into accord with the provisions of the Convention on the Physical Protection of Nuclear Material. The amendments will result in strengthened protection of shipments of Convention-defined materials during international transport. The amendments will affect licensees and carriers who import, export, or transport international shipments of Convention-

defined materials in four specifically-defined situations.

EFFECTIVE DATE: This notice of rulemaking is being published for information only. The amendments are intended to become effective 30 days after the 21st country ratifies the Convention. Following the 21st ratification, the NRC will republish this notice of rulemaking with the effective date expressed as a calendar date.

FOR FURTHER INFORMATION CONTACT: Carl B. Sawyer, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: 301-427-4186.

SUPPLEMENTARY INFORMATION:

Background

On March 3, 1980, the United States signed the Convention on the Physical Protection of Nuclear Material (the Convention) (Exec. H, Senate, 96th Cong., 2d Sess.). The Convention is the result of a U.S. proposal originally made by the Secretary of State in 1974. Its purpose is to provide for the establishment and maintenance of adequate physical security with respect to international shipment of significant quantities of source or special nuclear material. The Senate approved the Convention on July 30, 1981 and the implementing legislation was enacted by the Congress and signed by the President on October 18, 1982 (Pub. L. 97-351, 96 Stat. 1663). The Convention will enter into force on the thirtieth day following the date on which the twenty-first country formally ratifies the Convention. The U.S. ratified the Convention on December 13, 1982.

Publication of the intended final rule at this time demonstrates continuing U.S. support for the Convention and will encourage other countries to ratify the Convention. The provisions of the final rule, however, are not scheduled to become effective until after the Convention enters into force. International cooperation is necessary if the strengthened protection of international shipments envisioned by the Convention is to be attained. Rules enacted by the U.S. or any one country alone would have little impact on overall protection of international shipments. As of this date, eleven of the needed twenty-one countries have ratified the Convention.

A review of NRC regulations and procedures disclosed that they are in accord with the Convention except for four specific situations: (1) The physical protection of transient shipments of special nuclear material of moderate and low strategic significance and irradiated reactor fuel; (2) advance notification to the NRC regarding the export of Convention-defined nuclear materials; (3) advance notification and assurance of protection to NRC concerning transient shipments of Convention-defined nuclear material between countries that are not parties to the Convention; and (4) advance notification and assurance of protection to the NRC regarding the importation of Convention-defined nuclear materials from countries that are not parties to the Convention. Convention-defined material includes natural uranium (other than in the form of ore or ore residue) in a quantity exceeding 500 kilograms, plutonium, uranium-233, uranium enriched in uranium-235, and irradiated fuel. A transient shipment is one originating and terminating in foreign countries, that is transported on a vessel or aircraft which stops at a U.S. port.

On July 14, 1983, the NRC published a **Federal Register** notice (48 FR 32182) inviting public comment on a proposed rule that would bring NRC regulations into accord with the Convention in the four situations cited above. The 90-day comment period ended on October 13, 1983.

Five letters of comment were received, each containing several comments and suggestions. The individual comments and suggestions were considered by NRC and are discussed in terms of three categories: (A) Those that led to a change in the regulations as proposed; (B) those that are to be incorporated into various guidance documents; and (C) those that were not adopted.

A. Comments That Led to a Change in the Rule as Proposed

1. *Single notification to NRC.* The proposed rule called for licensees to provide shipment notification to the NRC headquarters and to the cognizant NRC Regional Office. Some comments argued that this is a needless burden on licensees and that the NRC should set up whatever internal mechanisms are needed to work from a single notification.

The NRC agrees with this suggestion. The final rule has been revised to call for a licensee to notify only the NRC headquarters.

2. *Specification of notification times.* The proposed rule called for notification 14 days in advance of the time transport is to commence. Some comments were concerned about possible changes in shipping plans during the 14-day period and requested that it be shortened.

The NRC agrees that a shorter notification period will likely contribute to more accurate notification details. The NRC staff has consulted with the staff of the Department of State and has determined that a 10-day period is the minimum needed to process the messages and communicate them to the countries situated along the shipment routes. The regulation has been modified accordingly. If experience shows that a shorter time can be tolerated or that a longer time is necessary, the regulation will be so modified in the future.

3. *Uniformity of notification times.* Some comments pointed out that the phrasing of the notification time requirements differs in the various parts of the proposed rule.

The NRC agrees with this observation Identical phrasing is used in the various parts of the final rule.

4. *Changes to advance notification information.* One comment pointed out that routes or other shipment plans might be changed at the last minute before shipment, thereby invalidating at least part of the advance notification information.

The NRC agrees that the rule should provide for such last minute changes. The rule has been modified to permit the advance notification information to be modified by telephone.

5. *Simplification of proposed §§ 40.66(b)(5) and 40.67(b)(5).* Some comments suggested that the regulation would be clearer if the text of subject proposed paragraphs is replaced by the referenced material in Appendix E. Another comment asked what a licensee must do to provide the "assurance" referred to in the subject paragraphs as proposed.

The suggestion was adopted. The term "assurance" does not appear in the redrafted paragraphs.

6. *Changes § 73.72 to include irradiated fuel.* Some comments pointed out that (1) the phrasing of § 73.72 could lead a reader to believe that it applies exclusively to a formula quantity of strategic special nuclear material; but (2) § 73.37(b)(1) requires that spent fuel shipments be reported under § 73.72. The NRC agrees with the comment and has rephrased § 73.72.

7. *Clarification.* Several comments pointed out language defects in §§ 40.12 and 70.20b(e) and in Appendix E. The passages in Parts 40 and 70 have been modified to eliminate the defects. Introductory phrasing to Appendix E has been modified to emphasize that a verbatim quotation is used. Finally, cross references have been added in Parts 40 and 110.

B. Comments Incorporated Into Guidance

Some comments and suggestions are to be addressed in various guidance documents. The purpose of this guidance is to describe some methods acceptable to the NRC staff for implementing the provisions. The guidance is intended as an aid to licensees and is not legally binding.

The specific guidance documents involved will be explicitly identified and made available when this notice of rulemaking is republished following ratification of the Convention by the 21st country (see *Effective Date* section). Following is a summary of comments to be addressed in guidance documents.

1. *Details of shipment location.* One comment suggested that §§ 40.23(2)(i) and 70.20b(f)(2)(i) should be modified to specify details of the location information needed (e.g., street address, berth, etc.).

NRC needs to have the information specified to a level that will enable inspectors to find and observe the vessel bearing the shipment. Sometimes the information needed will not be available when the advance notification is prepared. Moreover, the NRC believes that the various combinations of transport modes, locations, and contingency situations combine to make the detailed specification of shipment location more lengthy than is appropriate for a regulation. The matter will be addressed in an appropriate guidance document.

2. *Definitions.* One comment asked for definitions of: (1) "Ore or ore residue" and (2) "Storage incidental to international nuclear transport." Another comment asks whether "storage incidental to international nuclear transport" includes the time at the container loading station and, if so, will the Inspection and Enforcement groups of the NRC accept the normal conditions at these locations as meeting the requirements of "Controlled Access Area" as it is defined in § 73.2(Z). Still another comment asks whether uranium ore concentrate-U_3O_8 is considered to fall within the category of natural uranium other than in the form of ore or ore residue.

In this context, "ore" means natural mineral that has been mined with the intention of later treatment to extract the uranium contained therein. "Natural uranium" means uranium containing U-238 and U-235 in the proportions found in nature. "Ore residue" means that part of the ore that remains after the treatment process to remove the uranium. For an export shipment, the period of international transport commences when the first transporter takes custody of the shipment at the port of departure from the United States and ends when a prearranged agency in the receiving country takes custody of the shipment. For an import shipment, international transport ends when the shipment is cleared through U.S. customs at the U.S. port of entry.

"Storage incidental to international transport" means any storage of the shipment during the period of international transport, and occurs most commonly when a shipment is removed from one transport vehicle and stored temporarily with the intention of subsequent loading aboard another transport vehicle.

The NRC believes that the Convention is intended to apply to any product (of a manmade chemical reaction) containing natural uranium in greater concentration than that in natural ore. In natural ore, the concentration of uranium is a few pounds per ton. In the uranium concentrate U_3O_8, uranium accounts for about 85% of the weight. Accordingly, the Convention is interpreted by the NRC to apply to U_3O_8.

The above information will be included in a guidance document.

The final rule imposes no change to current security requirements applicable to loading stations in the United States.

3. *Publication of selected parts of the Convention.* One comment offered the view that public understanding of the regulation would be improved if the complete text of the Convention's Annex I and II be included in the regulations.

Annex I appears in both the proposed and final rule as Appendix E. Annex II essentially repeats the definitions of formula quantity of special nuclear material, special nuclear material of moderate strategic significance, and special nuclear material of low strategic significance that appear in 10 CFR Part 73 and was therefore considered redundant.

C. Comments Not Incorporated in the Regulation or Guidance

1. *Justification for the rule.* Some comments contended that the NRC has not provided a proper or sufficient basis for the new requirements.

a. *Need for protection of natural uranium shipments.* One comment questioned the justification for requirements for protection of natural uranium arguing that natural uranium does not pose a significant threat. Another comment pointed out that essentially all of the proposed requirements are routinely carried out as prudent management practice and accordingly there is no need for the explicit regulations.

The NRC agrees that natural uranium, even in large quantities, does not pose a threat in the absence of further processing. Further processing would include enrichment by diffusion, centrifuge, or laser technology and breeding of Pu-239 or 241 in heavy water research reactors or non-power or power reactors. International shipments between selected countries could likely be made without incident. The drafters of the Convention, however, were faced with the difficult problem of designing a set of protection requirements to apply to virtually all international shipments of Convention-defined materials and to apply indefinitely into the future. The drafters elected to include greater-than-500-kilogram shipments of natural uranium among the materials to be protected.

Inasmuch as the Convention is a U.S. initiative, with enabling legislation enacted by Congress and approved by the President, the Commission deems it necessary to have its regulations in accord with the provisions of the Convention. In the Convention, Annex I, Paragraph 2(c) sets forth the protection requirements for natural uranium. The NRC requirements are an adaptation of the Convention's requirements.

b. *Cost of protection of natural uranium shipments.* One comment argued that the proposed rule for protection of natural uranium would not improve security and would involve an undue burden on licensees.

The NRC agrees that the requirements, considered in isolation, do not constitute a strong protection system. However, when considered as an integral and necessary part of the larger package of Convention provisions, a somewhat different picture emerges. Signatories to the Convention agree, for example, to cooperate in the protection of shipments, in the recovery of shipments that are stolen, and in the prosecution of persons who steal or conspire to steal shipments. The NRC believes that the Convention will lead to actual protection and deterrents far stronger than those now in force. When those additional benefits are considered, the cost of the requirements is justified.

2. *Phrasing of requirements for protection of natural uranium.* One comment suggested that the regulation reference the language of the Convention, e.g., as set forth in footnote c of Appendix C of Part 110.

The suggestion was not adopted. The NRC is concerned that a regulation written as suggested would be too vague for uniform implementation. More concrete phrasing, such as that

proposed, is less likely to be misunderstood.

3. *Justification for protection of shipments of low strategic significance.* Some comments questioned the need for the requirements of § 73.73 for export shipments of special nuclear material of low strategic significance and of § 73.74 for import shipments of low strategic significance from countries that are not party to the Convention. The requirements were seen as either unnecessary or as being overly burdensome.

These suggestions were not adopted. The Convention provides explicitly for protection of what it defines as Category III material. Category III material is essentially identical to what NRC regulations call material of low strategic significance. The two shipment situations of concern here (the export of material of low strategic significance to all countries, and the import of material of low strategic significance from a country not a party to the Convention) are not addressed elsewhere in NRC regulations. The need for and benefit of explicitly addressing each provision of the Convention have been discussed in paragraph 1, in connection with comments on protection requirements for natural uranium.

4. *NRC use of notifications and NRC costs.* One comment asked what NRC will do with the notification and whether NRC will have to hire larger staffs both at headquarters and in the Regions to handle notifications for material of "low strategic significance".

The NRC will arrange for the shipment information to be transmitted (through Department of State channels) to countries that will be transited by the shipment. Current planning calls for an additional 0.5 staff-year to handle the advance notifications at NRC headquarters. The impact on Office of Inspection and Enforcement resources will involve developing written guidance to support any reactive inspections or responses to serious offenses involving nuclear material that may be required. Development of this guidance and infrequent reactive activities are expected to be accomplished without additional resources.

5. *Impacts on carriers.* Some comments addressed various aspects of how the amendments could affect carriers.

a. *Intent of amendments.* One comment questioned whether the amendments would result in the licensing of carriers.

A carrier of a shipment of Convention-defined material would become a general licensee and thus be subject to applicable NRC regulations for the duration of the time that it possesses the shipment in the U.S. A general license does not require the filing of an application with the Commission or the issuance of a licensing document to the licensee. For some years, a similar general license has been issued to carriers of spent fuel and of Category I shipments. The amendments under consideration here would extend the general license to include carriers who transport other Convention-defined materials.

b. *Carrier awareness of general license process.* One comment expressed concern that carriers of transient shipments might not be aware of the general license. The carrier might, therefore, unwittingly fail to comply with the amendments during stopovers in the U.S. and be liable for fine or other penalty.

The amendments will become effective only after at least 21 countries ratify the Convention. Most international shipments will originate or terminate in one of these countries. Similar protection requirements will be imposed in each of these countries. With such widespread application of similar requirements, the NRC believes that international carriers will become aware of the general license and the related requirements.

c. *Carrier response to general license.* Some comments concluded that carriers either might refuse to transport Convention-defined materials rather than become NRC licensees subject to NRC requirements or might use the requirements as an excuse to raise rates to an unreasonable level.

The scenario that carriers might refuse to accept shipments or might charge excessively to carry the shipments is possible but speculative. Licensees can reduce the potential burden on carriers. For import and export shipments, protection during international shipment will likely be arranged by the foreign importer or exporter or by the domestic importer or exporter. With appropriate cooperation between the shipper, receiver, and carrier, matters could be arranged so as to minimize the burden on the carrier and the potential concern could possibly be avoided.

For some years, carriers of certain nuclear materials have become general licensees under regulations in 10 CFR § 70.20a. The NRC is aware of no inordinate difficulty being imposed upon carriers because, in practice, the protection requirements are generally arranged for and carried out by the NRC licensee which does the shipping or receiving.

d. *Exemption for private carriage.* One comment suggested that § 40.12(a) should exempt private carriage.

The NRC believes that the suggested change is unnecessary. Carriers of nuclear materials appear to be adequately covered by the current phrasing which is repeated in several other parts of our regulations. The NRC is aware of no carrier or other person who is being improperly inconvenienced by the current phrasing.

6. *Spent fuel shipments.* Some comments addressed various aspects of protection of transient shipments of spent fuel.

a. *Appropriateness of current requirements.* One comment suggested that the proposed § 70.20b(e) should be revised to require protection of transient shipments of spent fuel equivalent to Annex I and II of the Convention rather than referring to [the more stringent] § 73.37 requirements.

The suggestion was not adopted because it would introduce non-uniformity wherein protection requirements for a transient shipment of spent fuel in the U.S. would be different from requirements for a domestic shipment. However, the NRC agrees with the view that current requirements for the protection of spent fuel may be overly stringent. Moderated requirements for protection of spent fuel shipments were published in proposed form on June 8, 1984 in the **Federal Register** (49 FR 23867).

b. *Differing kinds of spent fuel.* One comment suggested that current requirements are based solely on characteristics of high burnup fuel from light water power reactors and do not take into account the more favorable characteristics of spent fuel from research reactors or high temperature gas cooled power reactors.

The NRC agrees with the comment. Research is currently in progress to determine whether protection requirements should take into account the differing characteristics of the spent fuel from various kinds of reactors.

7. *Respective role of DOT and NRC.* One comment pointed out that for the U.S., the Department of Transportation is the "national competent authority" responsible for administering International Atomic Energy Agency (IAEA) transportation safety requirements in the U.S. ["National competent authority" is an IAEA term used in that agency's documents.] Accordingly, the comment reasoned that DOT rather than NRC should administer Convention concerns, including advance notification, and thereby avoid unnecessary duplication, waste of time, and waste of money.

Both the DOT and the NRC have a statutory responsibility and authority to regulate the safety and security of shipments of radioactive materials in the U.S. Recognizing the possibility for duplication of effort and possible conflicts in regulations, the two agencies came to an agreement on their respective roles. Among other things, the agencies decided that the NRC should be the lead agency for issuance of transportation security regulations for shipments of radioactive materials. The Convention, of course, deals with the subject of transportation security. Largely for that reason, the agencies agreed that NRC should issue the regulations needed to implement the Convention.

The NRC agrees that the DOT is the Competent Authority for administering the IAEA regulations for transportation safety in the U.S.; however, the principal activity of the DOT in connection with the subject of this rulemaking is to carry out safety reviews for import packages. For each import package design, the DOT issues one approval which is valid for a period of up to 3 years unless explicitly modified. The DOT has no requirements for notification of individual shipments. The DOT has no regulations requiring carriers to specifically comply with the notification and shipment protection guidelines contained in IAEA document INFCIRC/225/Rev. 1.

8. *Comparative costs for shipments.* One comment expressed concern that the rule will make the transportation of nuclear material of "low strategic significance" have the same importance and cost as materials of "moderate strategic significance" and irradiated materials which already have the majority of transportation restrictions.

The NRC disagrees with the conclusion reached in the comment. The protection requirements for Category II and III shipments are similar but not identical. For Category II shipments, there is a requirement that the shipment be stored in an area under surveillance at all times by guards or electronic devices during storage incidental to international transport. A less stringent requirement applies to Category III shipments during storage incidental to international transport. Because of this difference, the NRC expects that typical shipment protection cost for a Category III shipment will be lower than that for a Category II shipment. Protection cost for a Category II shipment will likely be lower than that for a spent fuel shipment.

9. *Protection of shipment information.* One comment asked that shipment information be kept confidential because it would be of interst to competitors. Another comment pointed out that release of shipment information into the public domain would reduce rather than strengthen physical protection. Yet another comment pointed out that the IAEA publication *The Physical Protection of Nuclear Material, INFCIRC/225/Rev. 1* recommends that shipment information not be made public.

The NRC agrees with the comment that information concerning international shipments should be withheld from public disclosure if so requested by any of the foreign countries to be transited. This is consistent with Article 6 of the Convention. Other countries have generally accepted the view that public disclosure of shipment information is a significant detriment to physical security (as discussed in INFCIRC/225/Rev. 1).

For an export shipment, the NRC considers international shipment to commence at the port of departure from the United States. For an import shipment, the NRC considers international transport to end at the port of entry.

Shipment information for international shipments can be protected under various existing statutes and regulations, depending on the kind and quantity of nuclear material involved. Shipment information concerned with Category I shipments is protected as U.S. national security information. Shipment information for most Category II and Category III shipments provided to the NRC in confidence by a foreign country can be protected (i.e., withheld from disclosure) under the present provisions of 10 CFR 2.790(d). If it becomes necessary to provide such information to a licensee, a license condition prohibiting disclosure of the information would be written into the appropriate license. The present NRC practice not to withhold information on domestic routes for spent fuel shipments, including the domestic segments route for import or export shipments, would continue unchanged.

Paperwork Reduction Act Statement

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget approval numbers 3150–0002, 3150–0009, and 3150–0020.

Regulatory Analysis

The Commission has prepared a regulatory analysis on this final regulation. The analysis examines the costs and benefits and environmental implications of the regulation. Interested persons may examine a copy of the regulatory analysis at the NRC Public Document Room, 1717 H Street NW, Washington, DC. Single copies of the analysis may be obtained from Carl B. Sawyer, Office of Nuclear Material Safety and Safeguards, Nuclear Regulatory Commission, Washington, DC 20555, telephone: 301–427–4186.

Finding of No Significant Environmental Impact: Availability

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule is not a major Federal Action significantly affecting the quality of the human environment and therefore an environmental impact statement is not required. The proposed rule would improve the physical protection of nuclear material during international transport and would result in no negative environmental impacts. The environmental assessment and finding of no significant impact on which this determination is based are part of the Regulatory Analysis prepared in connection with this rulemaking.

Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act (5 U.S.C. 605(b)), the Commission certifies that this rule does not have a significant economic impact on a substantial number of small entities. The NRC reviewed data on import and export shipments made during the period between December 1, 1983 and February 29, 1984, and found that no small entities in the U.S. were among the importers or exporters. Additionally, public comments responding to the proposed rule do not indicate significant economic impact on a large number of small entities. (One letter of comment is from a company identifying itself as a small entity. The objective of the letter, however, is judged to be to present constructive comment for improving the proposed rule rather than to demonstrate that, because of its size, the company is likely to bear a disproportionate adverse economic impact.) The data reviewed shows no transient shipments of spent fuel or formula quantities of strategic special nuclear material; such shipments are very rare. Currently, there are no reporting requirements for transient shipments of natural uranium or special nuclear material of low or moderate significance. Such shipments, if they are regularly made, are not expected to

affect a substantial number of small entities.

List of Subjects

10 CFR Part 40

Government contracts, Hazardous materials—transportation, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Source material, Uranium.

10 CFR Part 70

Hazardous materials—transportation, Nuclear materials, Packaging and containers, Penalty, Radiation protection, Reporting and recordkeeping requirements, Scientific equipment, Security measures, Special nuclear material.

10 CFR Part 73

Hazardous materials—transportation, Incorporation by reference, Nuclear materials, Nuclear power plants and reactors, Penalty, Reporting and recordkeeping requirements, Security measures.

10 CFR Part 110

Administrative practice and procedure, Classified information, Export, Import, Incorporation by reference, Intergovernmental relations, Nuclear materials, Nuclear power plants and reactors, Penalty, Reporting and recordkeeping requirements, Scientific equipment.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is adopting the following amendments to Part 40, 70, 73 and 110.

50 FR 14692
Published 4/15/85
Effective 4/1/85

Regional Nuclear Materials Licensing for Certain Federal Facilities

See Part 30 Statements of Consideration

PART 50

DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

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Authority: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, 202, 206, 88 Stat. 1242,

"48FR5747"

1246, as amended (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Section 50.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Sections 50.57(d), 50.58, 50.91, and 50.92 also issued under Pub. L. 97-415 Stat. 2071, 2073 (42 U.S.C. 2133, 2239). Section 50-78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80-50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Sections 50.100-50.102 also issued under sec. 188, 68 Stat. 955 (42 U.S.C. 2236). 48 FR 57477

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10(a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10(b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, 50.73, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

General Provisions

§ 50.1 Basis, purpose, and procedures applicable. 40 FR 8774

The regulations in this part are promulgated by the Nuclear Regulatory Commission pursuant to the Atomic Energy Act of 1954, as amended, (68 Stat. 919) and Title II of the Energy Reorganization Act of 1974 (88 Stat. 1242) to provide for the licensing of production and utilization facilities.

§ 50.2 Definitions.

As used in this part,

(a) "Production facility" means:

(1) Any nuclear reactor designed or used primarily for the formation of plutonium or uranium-233; or 21 FR 355

(2) Any facility designed or used for the separation of the isotopes of uranium or the isotopes of plutonium, except laboratory scale facilities designed or used for experimental or analytical purposes only; or

(3) Any facility designed or used for the processing of irradiated materials containing special nuclear material, except (i) laboratory scale facilities designed or used for experimental or analytical purposes, (ii) facilities in which the only special nuclear materials contained in the irradiated material to be processed are uranium enriched in the isotope U-235 and plutonium produced by the irradiation, if the material processed contains not more than 10^{-4} grams of plutonium per gram of U-235 and has fission product activity not in excess of 0.25 millicuries of fission products per gram of U-235, and 26 FR 4989

(iii) facilities in which processing is conducted pursuant to a license issued under Parts 30 and 70 of this chapter, or equivalent regulations of an Agreement State, for the receipt, possession, use, and transfer of irradiated special nuclear material, which authorizes the processing of the irradiated material on a batch basis for the separation of selected fission products and limits the process batch to not more than 100 grams of uranium enriched in the isotope 235 and not more than 15 grams of any other special nuclear material. 39 FR 4871

(b) "Utilization facility" means any nuclear reactor other than one designed or used primarily for the formation of plutonium or U-233. 21 FR 355

NOTE: Pursuant to subsections 11v. and 11cc., respectively, of the Act, the Commission may from time to time add to, or otherwise alter, the foregoing definitions of production and utilization facility. It may also include as a facility an important component part especially designed for a facility, but has not at this time included any component parts in the definitions.

(c) "Act" means the Atomic Energy Act of 1954 (68 Stat. 919) including any amendments thereto.

(d) [Reserved] 43 FR 6915

(e) "Atomic energy" means all forms of energy released in the course of nuclear fission or nuclear transformation.

(f) "Atomic weapon" means any device utilizing atomic energy, exclusive of the means for transporting or propelling the device (where such means is a separable and divisible part of the device), the principal purpose of which is for use as, or for development of, a weapon, a weapon prototype, or a weapon test device. 21 FR 355

(g) "By-product material" means any radioactive material (except special nuclear material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special nuclear material.

(h) "Commission" means the Nuclear Regulatory Commission or its duly authorized representatives.

(i) "Common defense and security" means the common defense and security of the United States.

(j) "Government agency" means any executive department, commission, independent establishment, corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government.

(k) "Nuclear reactor" means an apparatus, other than an atomic weapon, designed or used to sustain nuclear fission in a self-supporting chain reaction.

(l) "Person" means (1) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, government agency other than the Commission or the Department, except that the Department shall be considered a person to the extent that its facilities are subject to the licensing and related regulatory authority of the Commission pursuant to section 202 of the Energy Reorganization Act of 1974,[1] any State or any political subdivision of, or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing. 45 FR 14199

(m) "Produce," when used in relation to special nuclear material, means (1) to manufacture, make, produce, or refine special nuclear material; (2) to separate special nuclear material from other substances in which such material may be contained; or (3) to make or to produce new special nuclear material. 21 FR 355

(n) "Research and development" means (1) theoretical analysis, exploration, or experimentation; or (2) the extension of investigative findings and theories of a scientific or technical nature into practical application for experimental and demonstration purposes, including the experimental pro-

[1] The Department facilities identified in section 202 are:

(1) Demonstration Liquid Metal Fast Breeder reactors when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(2) Other demonstration nuclear reactors, except those in existence on January 19, 1975, when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

duction and testing of models, devices, equipment, materials, and processes.

(o) "Restricted Data" means all data concerning (1) design, manufacture, or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 142 of the Act. [21 FR 355]

(p) "Source material" means source material as defined in subsection 11z. of the Act and in the regulations contained in Part 40 of this chapter.

(q) "Special nuclear material" means (1) plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 51 of the act, determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material. [31 FR 15145]

(r) "Testing facility" means a nuclear reactor which is of a type described in § 50.21(c) of this part and for which an application has been filed for a license authorizing operation at:

(1) A thermal power level in excess of 10 megawatts; or

(2) A thermal power level in excess of 1 megawatt, if the reactor is to contain:

(i) A circulating loop through the core in which the applicant proposes to conduct fuel experiments; or

(ii) A liquid fuel loading; or

(iii) An experimental facility in the core in excess of 16 square inches in cross-section. [25 FR 1072]

(s) "United States", when used in a geographical sense, includes Puerto Rico and all territories and possessions of the United States. [45 FR 18905]

(t) "Controls" when used with respect to nuclear reactors means apparatus and mechanisms, the manipulation of which directly affects the reactivity or power level of the reactor. "Controls" when used with respect to any other facility means apparatus and mechanisms, the manipulation of which could affect the chemical, physical, metallurgical, or nuclear process of the facility in such a manner as to affect the protection of health and safety against radiation. [28 FR 3196]

(u) "Design bases" means that information which identifies the specific functions to be performed by a structure, system, or component of a facility, and the specific values or ranges of values chosen for controlling parameters as reference bounds for design. These values may be (1) restraints derived from generally accepted "state of the art" practices for achieving functional goals, or (2) requirements derived from analysis (based on calculation and/or experiments) of the effects of a postulated accident for which a structure, system, or component must meet its functional goals. [33 FR 18610]

(v) "Reactor coolant pressure boundary" means all those pressure-containing components of boiling and pressurized water-cooled nuclear power reactors, such as pressure vessels, piping, pumps, and valves, which are:

(1) Part of the reactor coolant system, or

(2) Connected to the reactor coolant system, up to and including any and all of the following:

(i) The outermost containment isolation valve in system piping which penetrates primary reactor containment,

(ii) The second of two valves normally closed during normal reactor operation in system piping which does not penetrate primary reactor containment,

(iii) The reactor coolant system safety and relief valves.

For nuclear power reactors of the direct cycle boiling water type, the reactor coolant system extends to and includes the outermost containment isolation valve in the main steam and feedwater piping. [45 FR 14199]

(w) "Department" and "Department of Energy" means the Department of Energy established by the Department of Energy Organization Act (Pub. L. 95-91, 91 Stat. 565, 42 U.S.C. 7101 *et seq.*), to the extent that the Department, or its duly authorized representatives, exercises functions formerly vested in the Atomic Energy Commission, its Chairman, members, officers and components and transferred to the U.S. Energy Research and Development Administration and to the Administrator thereof pursuant to sections 104(b), (c) and (d) of the Energy Reorganization Act of 1974 (Pub. L. 93-438, 88 Stat. 1233 at 1237, 42 U.S.C. 5814) and retransferred to the Secretary of Energy pursuant to section 301(a) of the Department of Energy Organization Act (Pub. L. 95-91, 91 Stat. 565 at 577-578, 42 U.S.C. 7151).

(x) "Electric utility" means any entity that generates or distributes electricity and which recovers the cost of this electricity, either directly or indirectly, through rates established by the entity itself or by a separate regulatory authority. Investor-owned utilities, including generation or distribution subsidiaries, public utility districts, municipalities, rural electric cooperatives, and State and Federal agencies, including associations of any of the foregoing, are included within the meaning of "electric utility." [49 FR 35747]

§ 50.3 Interpretations. [21 FR 355]

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

§ 50.4 Communications.

(a) Except where otherwise specified or except as provided under a regional licensing program identified in paragraph (c) of this section, any communication or report concerning the regulations in this part and any application filed under these regulations may be submitted to the Commission as follows:

(1) By mail addressed to—Director of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

(2) By delivery in person to the Commission offices at—

(i) 1717 H Street, NW., Washington, D.C.; or

(ii) 7920 Norfolk Avenue, Bethesda, Maryland.

(b) Before making any submittal in microform, the applicant or licensee shall contact the Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 492-8585, to obtain specifications and copy requirements.

(c)(1) The Commission has delegated to the Regional Administrator of Region IV authority and responsibility for implementing selected parts of its nuclear reactor licensing program for the Fort St. Vrain Nuclear Generating Station.

(2) Any application filed under the regulations in this part and any inquiry, communication, information, or report relating to the Fort St. Vrain Nuclear Generating Station must be submitted to the Regional Administrator, Region IV, U.S. Nuclear Regulatory Commission, 611 Ryan Plaza Drive, Suite 1000, Arlington, Texas 76011. Upon receipt, the Regional Administrator of Region IV or his designee will transmit to the Director of Nuclear Reactor Regulation any matter which is not within the scope of the Regional Administrator's delegated licensing authority.

47 FR 55203

§ 50.7 Employee protection.

(a) Discrimination by a Commission licensee, permittee, an applicant for a Commission license or permit, or a contractor or subcontractor of a Commission licensee, permittee, or applicant against an employee for engaging in certain protected activities is prohibited. Discrimination includes discharge and other actions that relate to compensation, terms, conditions, and privileges of employment. The protected activities are established in section 210 of the Energy Reorganization Act of 1974, as amended, and in general are

47 FR 30452

related to the administration or enforcement of a requirement imposed under the Atomic Energy Act or the Energy Reorganization Act.

(1) The protected activities include but are not limited to—

(i) Providing the Commission information about possible violations of requirements imposed under either of the above statutes;

(ii) Requesting the Commission to institute action against his or her employer for the administration or enforcement of these requirements; or

(iii) Testifying in any Commission proceeding.

(2) These activities are protected even if no formal proceeding is actually initiated as a result of the employee assistance or participation.

(3) This section has no application to any employee alleging discrimination prohibited by this section who, acting without direction from his or her employer (or the employer's agent), deliberately causes a violation of any requirement of the Energy Reorganization Act of 1974, as amended, or the Atomic Energy Act of 1954, as amended.

47 FR 30452

(b) Any employee who believes that he or she has been discharged or otherwise discriminated against by any person for engaging in the protected activities specified in paragraph (a)(1) of this section may seek a remedy for the discharge or discrimination through an administrative proceeding in the Department of Labor. The administrative proceeding must be initiated within 30 days after an alleged violation occurs by filing a complaint alleging the violation with the Department of Labor, Employment Standards Administration, Wage and Hour Division. The Department of Labor may order reinstatement, back pay, and compensatory damages.

(c) A violation of paragraph (a) of this section by a Commission licensee, permittee, an applicant for a Commission license or permit, or a contractor or subcontractor of a Commission licensee, permittee, or applicant may be grounds for—

(1) Denial, revocation, or suspension of the license.

(2) Imposition of a civil penalty on the licensee or applicant.

(3) Other enforcement action.

(d) Actions taken by an employer, or others, which adversely affect an employee may be predicated upon nondiscriminatory grounds. The prohibition applies when the adverse action occurs because the employee has engaged in protected activities. An employee's engagement in protected activities does not automatically render him or her immune from discharge or discipline for legitimate reasons or from adverse action dictated by nonprohibited considerations.

47 FR 30452

(e) Each licensee, permittee and each applicant shall post Form NRC–3, "Notice to Employees," on its premises. Posting must be at locations sufficient to permit employees protected by this section to observe a copy on the way to or from their place of work. Premises must be posted not later than 30 days after an application is docketed and remain posted while the application is pending before the Commission, during the term of the license, and for 30 days following license termination.

Note.—Copies of Form NRC–3 may be obtained by writing to the Regional Administrator of the appropriate U.S. Nuclear Regulatory Commission Regional Office listed in Appendix D, Part 20 of this chapter or the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

§ 50.8 Information collection requirements: OMB approval.

49 FR 19623

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). OMB has approved the information collection requirements contained in this part under control number 3150–0011.

(b) The approved information collection requirements contained in this part appear in §§ 50.30, 50.33, 50.33a, 50.34, 50.34a, 50.35, 50.36, 50.36a, 50.48, 50.49, 50.54, 50.55, 50.55a, 50.59, 50.60, 50.71, 50.72, 50.80, 50.82, 50.90, 50.91, and Appendices A, B, E, G, H, J, K, M, N, and R.

(c) This part contains information collection requirements in addition to those approved under the control number specified in paragraph (a) of this section. These information collection requirements and the control numbers under which they are approved are as follows:

(1) In § 50.73, Form NRC–366 is approved under control number 3150–0104.

(2) In § 50.78, Form N–71 is approved under control number 3150–0056.

REQUIREMENT OF LICENSE, EXCEPTIONS

43 FR 6915

§ 50.10 License required.

(a) Except as provided in § 50.11, no person within the United States shall transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, or use any production or utilization facility except as authorized by a license issued by the Commission.

33 FR 2381

(b) No person shall begin the construction of a production or utilization facility on a site on which the facility is to be operated until a construction permit has been issued. As used in this paragraph, the term "construction" shall be deemed to include pouring the foundation for, or the installation of, any portion of the permanent facility on the site, but does not include:

(1) Site exploration, site excavation, preparation of the site for construction of the facility, including the driving of piles, and construction of roadways, railroad spurs, and transmission lines;

25 FR 8712

(2) Procurement or manufacture of components of the facility;

(3) Construction of non-nuclear facilities (such as turbogenerators and turbine buildings) and temporary buildings (such as construction equipment storage sheds) for use in connection with the construction of the facility; and

(4) With respect to production or utilization facilities, other than testing facilities, required to be licensed pursuant to section 104a or section 104c of the Act, the construction of buildings which will be used for activities other than operation of a facility and which may also be used to house a facility. (For example, the construction of a college laboratory building with space for installation of a training reactor is not affected by this paragraph.

37 FR 5745

This paragraph does not apply to production or utilization facilities subject to paragraph (c) of this section.

49 FR 9352

(c) Notwithstanding the provisions of paragraph (b) of this section, and subject to paragraphs (d) and (e) of this section, no person shall effect commencement of construction of a production or utilization facility subject to the provisions of § 51.20(b) of this chapter on a site on which the facility is to be operated until a construction permit has been issued. As used in this paragraph, the term "commencement of construction" means any clearing of land, excavation or other substantial action that would adversely affect the environment of a site, but does not mean:

(1) Changes desirable for the temporary use of the land for public recreational uses, necessary borings to determine foundation conditions or other preconstruction monitoring to establish background information related to the suitability of the site or to the protection of environmental values;

(2) Procurement or manufacture of components of the facility; and

(3) With respect to production or utilization facilities, other than testing facilities, required to be licensed pursuant to section 104a or section 104c of the Act, the construction of buildings which will be used for activities other than operation of a facility and which may also be used to house a facility. (For example, the construction of a college laboratory building with space for installation of a training reactor is not affected by this paragraph.)

(d)(1) Each person subject to the provisions of paragraph (c) of this section, who is, on March 21, 1972, conducting activities permitted pursuant to paragraph (b) of this section in effect prior to March 21, 1972, may furnish to the Commission within 30 days after March 21, 1972 or such later date as may be approved by the Commission upon good cause shown, a written statement of any reasons, with supporting factual submission, why, with reference to the factors stated in paragraph (d)(2) of this section, the activities should be continued, pending the issuance of a construction permit, notwithstanding the provisions of paragraph (c) of this section. If such written statement has been submitted, within the time specified, such activities may continue to be conducted pending Commission action pursuant to paragraph (d)(2) of this section.

(2) Upon submission of a statement of reasons pursuant to paragraph (d)(1) of this section the Commission may authorize the continued conduct of activities permitted by paragraph (b) of this section in effect prior to March 21, 1972, upon consideration and balancing of the following factors:

(i) Whether continuation of the activities will give rise to a significant adverse impact on the environment and the nature and extent of such impact, if any;

(ii) Whether redress of any adverse environmental impact from continuation of the activities can reasonably be effected should such redress be necessary;

(iii) Whether continuation of the activities would foreclose subsequent adoption of alternatives; and

(iv) The effect of delay in conducting such activities on the public interest, including the power needs to be served by the proposed facility, the availability of alternative sources, if any, to meet those needs on a timely basis, and delay costs to the applicant and to consumers.

(3) Activities permitted to be continued pursuant to this paragraph (d) shall be conducted in such a manner as will minimize or reduce their environmental impact.

(e)(1) The Director of Nuclear Reactor Regulation may authorize an applicant for a construction permit for a utilization facility which is subject to § 51.20(b) of this chapter, and is of the type specified in §§ 50.21(b) (2) or (3) or 50.22 or is a testing facility to conduct the following activities: (i) Preparation of the site for construction of the facility (including such activities as clearing, grading, construction of temporary access roads and borrow areas); (ii) installation of temporary construction support facilities (including such items as warehouse and shop facilities, utilities, concrete mixing plants, docking and unloading facilities, and construction support buildings); (iii) excavation for facility structures; (iv) construction of service facilities (including such facilities as roadways, paving, railroad spurs, fencing, exterior utility and lighting systems, transmission lines, and sanitary sewerage treatment facilities); and (v) the construction of structures, systems and components which do not prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. No such authorization shall be granted unless the staff has completed a final environmental impact statement on the issuance of the construction permit as required by Subpart A of Part 51 of this chapter.

(2) Such an authorization shall be granted only after the presiding officer in the proceeding on the construction permit application (i) has made all the findings required by §§ 51.104(b) and 51.105 of this chapter to be made prior to issuance of the construction permit for the facility, and (ii) has determined that, based upon the available information and review to date, there is reasonable assurance that the proposed site is a suitable location for a reactor of the general size and type proposed from the standpoint of radiological health and safety considerations under the Act and rules and regulations promulgated by the Commission pursuant thereto.

(3)(i) The Director of Nuclear Reactor Regulation may authorize an applicant for a construction permit for a utilization facility which is subject to § 51.20(b) of this chapter, and is of the type specified in §§ 50.21(b) (2) or (3) or 50.22 or is a testing facility to conduct, in addition to the activities described in paragraph (e)(1) of this section, the installation of structural foundations, including any necessary subsurface preparation, for structures, systems and components which prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public.

(ii) Such an authorization, which may be combined with the authorization described in paragraph (e)(1) of this section, or may be granted at a later time, shall be granted only after the presiding officer in the proceeding on the construction permit application has, in addition to making the findings and determinations required by paragraph (e)(2) of this section, determined that there are no unresolved safety issues relating to the additional activities that may be authorized pursuant to this paragraph that would constitute good cause for withholding authorization.

(4) Any activities undertaken pursuant to an authorization granted under this paragraph shall be entirely at the risk of the applicant and, except as to matters determined under paragraphs (e)(2) and (e)(3)(ii), the grant of the authorization shall have no bearing on the issuance of a construction permit with respect to the requirements of the Act, and rules, regulations, or orders promulgated pursuant thereto.

§ 50.11 Exceptions and exemptions from licensing requirements.

Nothing in this part shall be deemed to require a license for:

(a) The manufacture, production, or acquisition by the Department of Defense of any utilization facility authorized pursuant to section 91 of the Act, or the use of such facility by the Department of Defense or by a person under contract with and for the account of the Department of Defense;

(b) Except to the extent that Administration facilities of the types subject to licensing pursuant to section 202 of the Energy Reorganization Act of 1974 [1] are involved;

[1] The Department facilities identified in section 202 are:

(1) Demonstration Liquid Metal Fast Breeder reactors when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(2) Other demonstration nuclear reactors, except those in existence on January 19, 1975, when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(1)(i) The processing, fabrication or refining of special nuclear material or the separation of special nuclear material, or the separation of special nuclear material from other substances by a prime contractor of the Department under a prime contract for:

(A) The performance of work for the Department at a United States government-owned or controlled site;

(B) Research in, or development, manufacture, storage, testing or transportation of, atomic weapons or components thereof; or

(C) The use or operation of a production or utilization facility in a United States owned vehicle or vessel; or

(ii) By a prime contractor or subcontractor of the Commission or the Department under a prime contract or subcontract when the Commission determines that the exemption of the prime contractor or subcontractor is authorized by law; and that, under the terms of the contract or subcontract, there is adequate assurance that the work thereunder can be accomplished without undue risk to the public health and safety;

(2)(i) The construction or operation of a production or utilization facility for the Department at a United States government-owned or controlled site, including the transportation of the production or utilization facility to or from such site and the performance of contract services during temporary interruptions of such transportation; or the construction or operation of a production or utilization facility for the Department in the performance of research in, or development, manufacture, storage, testing, or transportation of, atomic weapons or components thereof; or the use or operation of a production or utilization facility for the Department in a United States government-owned vehicle or vessel: *Provided*, That such activities are conducted by a prime contractor of the Department under a prime contract with the Department.

(ii) The contruction or operation of a production or utilization facility by a prime contractor or subcontractor of the Commission or the Department under his prime contract or subcontract when the Commission determines that the exemption of the prime contractor or subcontrator is authorized by law; and that, under the terms of the contract or subcontract, there is adequate assurance that the work thereunder can be accomplished without undue risk to the public health and safety.

[40 FR 8774] (c) The transportation or possession of any production or utilization facility by a common or contract carrier or warehousemen in the regular course of carriage for another or storage incident thereto.

[48 FR 24009] **§ 50.12 Specific exemptions.**

(a) The Commission may, upon application by any interested person or upon its own initiative grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest. To obtain an exemption to Appendices G and H to this part, the requirements of paragraph 50.60(b) of this part must be met in addition to the requirements of this paragraph.

[40 FR 8774] (b) Any person may request an exemption permitting the conduct of activities prior to the issuance of a construction permit prohibited by § 50.10. The Commission may grant such an exemption upon considering and balancing the following factors:

(1) Whether conduct of the proposed activities will give rise to a significant adverse impact on the environment and the nature and extent of such impact, if any;

(2) Whether redress of any adverse environment impact from conduct of the proposed activities can reasonably be effected should such redress be necessary;

(3) Whether conduct of the proposed activities would foreclose subsequent adoption of alternatives; and

(4) The effect of delay in conducting such activities on the public interest, including the power needs to be used by the proposed facility, the availability of alternative sources, if any, to meet those needs on a timely basis and delay costs to the applicant and to consumers.

Issuance of such an exemption shall not be deemed to constitute a commitment to issue a construction permit. During the period of any exemption granted pursuant to this paragraph (b), any activities conducted shall be carried out in such a manner as will minimize or reduce their environmental impact.

[32 FR 13445] **§ 50.13 Attacks and destructive acts by enemies of the United States; and defense activities.**

An applicant for a license to construct and operate a production or utilization facility, or for an amendment to such license, is not required to provide for design features or other measures for the specific purpose of protection against the effects of (a) attacks and destructive acts, including sabotage, directed against the facility by an enemy of the United States, whether a foreign government or other person, or (b) use or deployment of weapons incident to U.S. defense activities.

[32 FR 13445]

[21 FR 355] CLASSIFICATION AND DESCRIPTION OF LICENSES

§ 50.20 Two classes of licenses.

Licenses will be issued to named persons applying to the Commission therefor, and will be either class 104 or class 103.

[43 FR 6915] **§ 50.21 Class 104 licenses; for medical therapy and research and development facilities.**

A class 104 license will be issued, to an applicant who qualifies, for any one or more of the following: to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, or use.

(a) A utilization facility for use in medical therapy; or

[35 FR 19655] (b)(1) A production or utilization facility the construction or operation of which was licensed pursuant to subsection 104b of the Act prior to December 19, 1970;

(2) A production or utilization facility for industrial or commercial purposes constructed or operated under an arrangement with the Administration entered into under the Cooperative Power Reactor Demonstration Program, except as otherwise specifically required by applicable law; and

(3) A production or utilization facility for industrial or commercial purposes, when specifically authorized by law.

[38 FR 11445] (c) A production or utilization facility, which is useful in the conduct of research and development activities of the types specified in section 31 of the Act, and which is not a facility of the type specified in paragraph (b) of this section or in § 50.22.

§ 50.22 Class 103 licenses; for commercial and industrial facilities.

A class 103 license will be issued, to an applicant who qualifies, for any one or more of the following: To transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, or use a production or utilization facility for industrial or commercial purposes; *Provided, however,* That in the case of a production or utilization facility which is useful in the conduct of research and development activities of the types specified in section 31 of the Act, such facility is deemed to be for industrial or commercial purposes if the facility is to be used so that more than 50 percent of the annual cost of owning and operating the facility is devoted to the production of materials, products, or energy for sale or commercial distribution, or to the sale of services, other than research and development or education or training.

43 FR 6915

§ 50.23 Construction permits.

A construction permit for the construction of a production or utilization facility will be issued prior to the issuance of a license if the application is otherwise acceptable, and will be converted upon due completion of the facility and Commission action into a license as provided in § 50.56 of this part. A construction permit for the alteration of a production or utilization facility will be issued prior to the issuance of an amendment of a license, if the application for amendment is otherwise acceptable, as provided in § 50.91.

35 FR 19655

§ 50.24 [Deleted]

APPLICATIONS FOR LICENSES, FORM, CONTENTS, INELIGIBILITY OF CERTAIN APPLICANTS

§ 50.30 Filing of applications for licenses; oath or affirmation.

(a) *Place of filing.* Each application for a license, including where appropriate a construction permit, or amendment thereof, and each amendment of such application, and correspondence, reports, or other written communications from the applicant to the Commission pertaining to such application, for a nuclear reactor, testing facility or other utilization facility, should be filed with the Director of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Each application for a license, including where appropriate a construction permit, or amendment thereof, and each amendment of such application, and correspondence, reports, or other written communications from the applicant to the Commission pertaining to such application, for a fuel reprocessing plant or other production facility, should be filed with the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Communications, reports, correspondence, and applications may be delivered in person at the Commission's offices at 1717 H Street NW., Washington, D.C. or at 7920 Norfolk Avenue, Bethesda, Maryland.

41 FR 15832

(b) *Oath or affirmation.* Each application for a license, including whenever appropriate a construction permit, or amendment thereof, and each amendment of such application should be executed in three signed originals by the applicant or duly authorized officer thereof under oath or affirmation.

(c) *Number of copies of application.* (1) Each filing of an application for a license to construct and operate a production or utilization facility (including amendments to such applications) should include three signed originals and the following number of copies:

(i) For an application for a license for a facility described in § 50.21(b) or § 50.22, or a testing facility: Fifteen (15) copies of that portion of the application containing the information required by §§ 50.33 and 50.37 (general information) and forty (40) copies of that portion of the application containing any of the information required by §§ 50.34 and 50.34a (safety analysis report) except that sixty (60) copies shall be filed if such portion of the application is an amendment to the safety analysis report; an additional ten (10) copies of the general information and thirty (30) copies of the safety analysis report, or part thereof or amendment thereto, shall be retained by the applicant for distribution in accordance with the written instructions of the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate. The Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards may request additional copies of applications and the safety analysis report where the design is of a unique nature or for applications submitted pursuant to this Part 50, Appendices M, N, and O.

41 FR 31521

(ii) For an application for an amendment to a license for a facility described in § 50.21(b) or 50.22, or a testing facility: Nineteen (19) copies of that portion of the application containing the information required by § 50.33 (general information) and 40 copies of that portion of the application containing the information required by §§ 50.34 and 50.34a (safety analysis report);

41 FR 15832

(iii) For an application for a license for any other facility, or an amendment to a license for such facility: Nineteen (19) copies of that portion of the application containing the information required by §§ 50.33 and 50.37 (general information) and that portion of the application containing the information required by §§ 50.34 and 50.34a (safety analysis report);

(iv) For an application for a license for a production or utilitization facility: Forty-one (41) copies of any applicant's environmental report required by subpart A of Part 51 of this chapter.

49 FR 9352

(2) With respect to an application for a license described in paragraph (c)(1)(i) of this section, the applicant shall, upon notification by the atomic safety and licensing board appointed to conduct the public hearing required by the Atomic Energy Act for the issuance of a construction permit, update the application and serve such updated copies of the application or parts thereof, eliminating all superseded information, together with an index of the updated application, as directed by the atomic safety and licensing board. In addition, at that time the applicant shall serve one such copy on the Atomic Safety and Licensing Appeal Panel. Further, at the time the application is offered into evidence at the public hearing on the application, the applicant shall provide sufficient updated copies so that one may be served by the Office of the Secretary on the Atomic Safety and Licensing Appeal Panel. Any subsequent amendments to the application shall be served on those served copies of the application, and three signed originals and the specified number of copies of such amendments shall be filed with the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate as provided in paragraph (c)(1)(i) of this section. At the time of filing of such an application, one copy shall be made available in an appropriate office near the site of the proposed facility for inspection by the public and updated as amendments to the application prior to the public hearing may be made. This updated copy shall be produced at the public hearing for the use of any other parties to the proceeding. The applicant shall certify that the

43 FR 18538

updated copies of the application contain the current contents of the application submitted in accordance with the requirements of this part. The applicant shall also update and serve copies of the application and make available a copy of such updated application in an appropriate office near the site of the facility for inspection by the public at such time as the Commission may issue a notice of public hearing concerning the issuance of an operating license.

(3) The copies required by paragraphs (b) and (c) (1) and (2) of this section need not be filed until that part of the application has been assigned a docket number or docketed pursuant to § 2.101(a) of this chapter. The following number of copies shall be filed to enable the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate, to determine whether the application is sufficiently complete to permit the assignment of a docket number or docketing as appropriate. 41 FR 15832

(i) Fifteen (15) copies of that portion of the application containing any of the information required by §§ 50.34 and 50.34a (safety analysis report);

(ii) Ten (10) copies of that portion of the application containing the general information required by § 50.33; and

(iii) Twenty (20) copies of any environmental report required by subpart A of Part 51 of this chapter. 49FR9352

(d) *Application for operating licenses.* The holder of a construction permit for a production or utilization facility shall, at the time of submission of the final safety analysis report, file an application for an operating license or an amendment to an application for a license to construct and operate a production or utilization facility for the issuance of an operating license, as appropriate. The application or amendment shall state the name of the applicant, the name, location and power level, if any, of the facility and the time when the facility is expected to be ready for operation, and may incorporate by reference any pertinent information submitted in accordance with § 50.33 with the application for a construction permit.

(e) *Filing fees.* Each application for a production or utilization facility license, including, whenever appropriate, a construction permit, other than a license exempted from Part 170 of this chapter, shall be accompanied by the fee prescribed in Part 170 of this chapter. No fee will be required to accompany an application for renewal, amendment or termination of a construction permit or operating license, except as provided in § 170.21 of this chapter. FR 19655

(f) *Environmental report.* An application for a construction permit or an operating license for a nuclear power reactor, testing facility, fuel reprocessing plant, or such other production or utilization facility whose construction or operation may be determined by the Commission to have a significant impact on the environment shall be accompanied by any Environmental Report required pursuant to Subpart A of Part 51 of this chapter. 49 FR 9352

§ 50.31 Combining applications.

An applicant may combine in one his several applications for different kinds of licenses under the regulations in this chapter.

§ 50.32 Elimination of repetition.

In his application, the applicant may incorporate by reference information contained in previous applications, statements or reports filed with the Commission: *Provided,* That such references are clear and specific.

§ 50.33 Contents of applications; general information. 21 FR 355

Each application shall state:

(a) Name of applicant;

(b) Address of applicant;

(c) Description of business or occupation of applicant;

(d) (1) If applicant is an individual, state citizenship.

(2) If applicant is a partnership, state name, citizenship and address of each partner and the principal location where the partnership does business.

(3) If applicant is a corporation or an unincorporated association, state:

(i) The state where it is incorporated or organized and the principal location where it does business;

(ii) The names, addresses and citizenship of its directors and of its principal officers;

(iii) Whether it is owned, controlled, or dominated by an alien, a foreign corporation, or foreign government, and if so, give details.

(4) If the applicant is acting as agent or representative of another person in filing the application, identify the principal and furnish information required under this paragraph with respect to such principal.

(e) The class of license applied for, the use to which the facility will be put, the period of time for which the license is sought, and a list of other licenses, except operator's licenses, issued or applied for in connection with the proposed facility.

(f) Except for an electric utility applicant for a license to operate a utilization facility of the type described in § 50.21(b) or § 50.22, information sufficient to demonstrate to the Commission the financial qualification of the applicant to carry out, in accordance with regulations in this chapter, the activities for which the permit or license is sought. As applicable, the following should be provided: 49FR35747

(1) If the application is for a construction permit, the applicant shall submit information that demonstrates that the applicant possesses or has reasonable assurance of obtaining the funds necessary to cover estimated construction costs and related fuel cycle costs. The applicant shall submit estimates of the total construction costs of the facility and related fuel cycle costs, and shall indicate the source(s) of funds to cover these costs.

(2) If the application is for an operating license, the applicant shall submit information that demonstrates the applicant possesses or has reasonable assurance of obtaining the funds necessary to cover estimated operation costs for the period of the license, plus the estimated costs of permanently shutting the facility down and maintaining it in a safe condition. The applicant shall submit estimates for total annual operating costs for each of the first five years of operation of the facility and estimates of the costs to permanently shut down the facility and maintain it in safe condition. The applicant shall also indicate the source(s) of funds to cover these costs. An application to renew or extend the term of an operating license must include the same financial information as is required in an application for an initial license. 49 FR 35747

(3) Each application for a construction permit or an operating license submitted by a newly-formed entity organized for the primary purpose of constructing or operating a facility must also include information showing:

(i) The legal and financial relationships it has or proposes to have with its stockholders or owners;

(ii) Its financial ability to meet any contractual obligation to the entity which they have incurred or proposed to incur; and

(iii) Any other information considered necessary by the Commission to enable it to determine the applicant's financial qualification.

(4) The Commission may request an established entity or newly-formed entity to submit additional or more detailed information respecting its financial arrangements and status of funds if the Commission considers this information appropriate. This may include information regarding a licensee's ability to continue the conduct of the activities authorized by the license and to permanently shut down the facility and maintain it in a safe condition.

(g) If the application is for an operating license for a nuclear power reactor, the applicant shall submit radiological emergency response plans of State and local governmental entities in the United States that are wholly or partially within the plume exposure pathway Emergency Planning Zone (EPZ),[3] as well as the plans of State governments wholly or partially within the ingestion pathway EPZ.[4] Generally, the plume exposure pathway EPZ for nuclear power reactors shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius. The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to the local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The size of the EPZs also may be determined on a case-by-case basis for gas-cooled reactors and for reactors with an authorized power level less than 250 MW thermal. The plans for the ingestion pathway shall focus on such actions as are appropriate to protect the food ingestion pathway. [45 FR 55402]

(h) If the applicant proposes to construct or alter a production or utilization facility, the application shall state the earliest and latest dates for completion of the construction or alteration. [21 FR 355]

(i) If the proposed activity is the generation and distribution of electric energy under a class 103 license, a list of the names and addresses of such regulatory agencies as may have jurisdiction over the rates and services incident to the proposed activity, and a list of trade and news publications which circulate in the area where the proposed activity will be conducted and which are considered appropriate to give reasonable notice of the application to those municipalities, private utilities, public bodies, and cooperatives, which might have a potential interest in the facility. [36 FR 19656]

(j) If the application contains Restricted Data or other defense information, it shall be prepared in such manner that all Restricted Data and other defense information are separated from the unclassified information. [21 FR 355]

(k) [Deleted 38 FR 3955.]

§ 50.33a Information requested by the Attorney General for antitrust review.

(a)(1) An applicant for a construction permit for a nuclear power reactor shall submit the information requested by the Attorney General as described in Appendix L to this part, if the application is for a class 103 permit and if the applicant has electrical generating capacity exceeding 1400 MW(e).

(2) An applicant for a construction permit for a nuclear power reactor shall submit the information requested by the Attorney General as described in paragraph 9 of Section II of Appendix L if the applicant has electrical generating capacity exceeding 200 MW(e) but no more than 1400 MW(e). Upon request of the Commission, the applicant shall furnish the other information described in Appendix L.

(3) An applicant for a construction permit for a nuclear power reactor is not required to submit the information described in Appendix L unless specifically requested by the Commission to provide the information, if the applicant has electrical generating capacity of 200 MW(e) or less.

(4) The information described in paragraphs (a)(1) and (2) of this section shall be submitted as a separate document prior to any other part of the license application as provided in paragraph (b) and in accordance with § 2.101 of this chapter. [44 FR 60715]

(b) Except as provided in paragraph (d), any person who applies for a class 103 construction permit for a nuclear power reactor on or after July 28, 1975 shall submit the document titled "Information Requested by the Attorney General for Antitrust Review" at least nine (9) months but not more than thirty-six months prior to the date of submittal of any part of the application for a class 103 construction permit. [42 FR 22882]

(c) Revoked 43 FR 49775

(d) Any person who applies for a class 103 construction permit for a nuclear power reactor pursuant to the provisions of § 2.101(a-1) and Subpart F of Part 2 of this chapter shall submit the document title "Information Requested by the Attorney General for Antitrust Review" at least nine (9) months but not more than thirty-six months prior to the filing of part two or part three of the application, whichever part is filed first, as specified in § 2.101(a-1) of this chapter. [42 FR 22882]

(e) Any person who applies for a class 103 construction permit for a uranium enrichment or fuel reprocessing plant shall submit such information as may be requested by the Attorney General for antitrust review, as a separate document as soon as possible and in accordance with § 2.101 of this chapter. [44 FR 60715]

[3] Emergency Planning Zones (EPZs) are discussed in NUREG-0396, EPA 520/1-78-016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light-Water Nuclear Power Plants," December 1978.

[4] If the State and local emergency response plans have been previously provided to the NRC for inclusion in the facility docket, the applicant need only provide the appropriate reference to meet this requirement.

§ 50.34 Contents of applications; technical information.

(a) *Preliminary safety analysis report.* Each application for a construction permit shall include a preliminary safety analysis report. The minimum information[8] to be included shall consist of the following:

(1) A description and safety assessment of the site on which the facility is to be located, with appropriate attention to features affecting facility design. Special attention should be directed to the site evaluation factors identified in Part 100 of this chapter. Such assessment shall contain an analysis and evaluation of the major structures, systems and components of the facility which bear significantly on the acceptability of the site under the site evaluation factors identified in Part 100 of this chapter, assuming that the facility will be operated at the ultimate power level which is contemplated by the applicant. With respect to operation at the projected initial power level, the applicant is required to submit information prescribed in paragraphs (a)(2) through (8) of this section, as well as the information required by this paragraph, in support of the application for a construction permit. [34 FR 6768]

(2) A summary description and discussion of the facility, with special attention to design and operating characteristics, unusual or novel design features, and principal safety considerations. [33 FR 18610]

(3) The preliminary design of the facility including:

(i) The principal design criteria for the facility.[9] Appendix A, General Design Criteria for Nuclear Power Plants, establishes minimum requirements for the principal design criteria for water-cooled nuclear power plants similar in design and location to plants for which construction permits have previously been issued by the Commission and provides guidance to applicants for construction permits in establishing principal design criteria for other types of nuclear power units; [36 FR 3255]

(ii) The design bases and the relation of the design bases to the principal design criteria;

(iii) Information relative to materials of construction, general arrangement, and approximate dimensions, sufficient to provide reasonable assurance that the final design will conform to the design bases with adequate margin for safety.

(4) A preliminary analysis and evaluation of the design and performance of structures, systems, and components of the facility with the objective of assessing the risk to public health and safety resulting from operation of the facility and including determination of (i) the margins of safety during normal operations and transient conditions anticipated during the life of the facility, and (ii) the adequacy of structures, systems, and components provided for the prevention of accidents and the mitigation of the consequences of accidents. [33 FR 18610]

Analysis and evaluation of ECCS cooling performance following postulated loss-of-coolant accidents shall be performed in accordance with the requirements of § 50.46 of this part for facilities for which construction permits may be issued after December 28, 1974. [39 FR 1001]

(5) An identification and justification for the selection of those variables, conditions, or other items which are determined as the result of preliminary safety analysis and evaluation to be probable subjects of technical specifications for the facility, with special attention given to those items which may significantly influence the final design: *Provided, however,* That this requirement is not applicable to an application for a construction permit filed prior to January 16, 1969. [33 FR 18610]

(6) A preliminary plan for the applicant's organization, training of personnel, and conduct of operations.

(7) A description of the quality assurance program to be applied to the design, fabrication, construction, and testing of the structures, systems, and components of the facility. Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," sets forth the requirements for quality assurance programs for nuclear power plants and fuel reprocessing plants. The description of the quality assurance program for a nuclear power plant or a fuel reprocessing plant shall include a discussion of how the applicable requirements of Appendix B will be satisfied. [36 FR 8330]

(8) An identification of those structures, systems, or components of the facility, if any, which require research and development to confirm the adequacy of their design; and identification and description of the research and development program which will be conducted to resolve any safety questions associated with such structures, systems or components; and a schedule of the research and development program showing that such safety questions will be resolved at or before the latest date stated in the application for completion of construction of the facility. [33 FR 18610]

(9) The technical qualifications of the applicant to engage in the proposed activities in accordance with the regulations in this chapter. [34 FR 6036]

(10) A discussion of the applicant's preliminary plans for coping with emergencies. Appendix E sets forth items which shall be included in these plans. [35 FR 19567]

(11) On or after February 5, 1979, applicants who apply for construction permits for nuclear powerplants to be built on multiunit sites shall identify potential hazards to the structures, systems and components important to safety of operating nuclear facilities from construction activities. A discussion shall also be included of any managerial and administrative controls that will be used during construction to assure the safety of the operating unit. [43 FR 34764]

(b) *Final safety analysis report.* Each application for a license to operate a facility shall include a final safety analysis report. The final safety analysis report shall include information that describes the facility, presents the design bases and the limits on its operation, and presents a safety analysis of the structures, systems, and components and of the facility as a whole, and shall include the following: [33 FR 18610]

(1) All current information, such as the results of environmental and meteorological monitoring programs, which has been developed since issuance of the construction permit, relating to site evaluation factors identified in Part 100 of this chapter.

(2) A description and analysis of the structures, systems, and components

[8] The applicant may provide information required by this paragraph in the form of a discussion, with specific references, of similarities to and differences from, facilities of similar design for which applications have previously been filed with the Commission.

[9] General design criteria for chemical processing facilities are being developed.

of the facility, with emphasis upon performance requirements, the bases, with technical justification therefor, upon which such requirements have been established, and the evaluations required to show that safety functions will be accomplished. The description shall be sufficient to permit understanding of the system designs and their relationship to safety evaluations. [33 FR 18610]

(i) For nuclear reactors, such items as the reactor core, reactor coolant system, instrumentation and control systems, electrical systems, containment system, other engineered safety features, auxiliary and emergency systems, power conversion systems, radioactive waste handling systems, and fuel handling systems shall be discussed insofar as they are pertinent.

(ii) For facilities other than nuclear reactors, such items as the chemical, physical, metallurgical, or nuclear process to be performed, instrumentation and control systems, ventilation and filter systems, electrical systems, auxiliary and emergency systems, and radioactive waste handling systems shall be discussed insofar as they are pertinent.

(3) The kinds and quantities of radioactive materials expected to be produced in the operation and the means for controlling and limiting radioactive effluents and radiation exposures within the limits set forth in Part 20 of this chapter.

(4) A final analysis and evaluation of the design and performance of structures, systems, and components with the objective stated in paragraph (a)(4) of this section and taking into account any pertinent information developed since the submittal of the preliminary safety analysis report.

Analysis and evaluation of ECCS cooling performance following postulated loss-of-coolant accidents shall be performed in accordance with the requirements of § 50.46 for facilities for which a license to operate may be issued after December 28, 1974. [39 FR 1001]

(5) A description and evaluation of the results of the applicant's programs, including research and development, if any, to demonstrate that any safety questions identified at the construction permit stage have been resolved. [33 FR 18610]

(6) The following information concerning facility operation:

(i) The applicant's organizational structure, allocations or responsibilities and authorities, and personnel qualifications requirements.

(ii) Managerial and administrative controls to be used to assure safe operation. Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," sets forth the requirements for such controls for nuclear power plants and fuel reprocessing plants. The information on the controls to be used for a nuclear power plant or a fuel reprocessing plant shall include a discussion of how the applicable requirements of Appendix B will be satisfied. [36 FR 18330]

(iii) Plans for preoperational testing and initial operations. [41 FR 6256]

(iv) Plans for conduct of normal operations, including maintenance, surveillance, and periodic testing of structures, systems, and components. [33 FR 18610]

(v) Plans for coping with emergencies, which shall include the items specified in Appendix E. [35 FR 19567]

(vi) Proposed technical specifications prepared in accordance with the requirements of § 50.36. [33 FR 18610]

(vii) On or after February 5, 1979, applicants who apply for operating licenses for nuclear powerplants to be operated on multiunit sites shall include an evaluation of the potential hazards to the structures, systems, and components important to safety of operating units resulting from construction activities, as well as a description of the managerial and administrative controls to be used to provide assurance that the limiting conditions for operation are not exceeded as a result of construction activities at the multiunit sites. [43 FR 34764]

(7) The technical qualifications of the applicant to engage in the proposed activities in accordance with the regulations in this chapter. [34 FR 6036]

(8) A description and plans for implementation of an operator requalification program. The operator requalification program shall, as a minimum, meet the requirements for those programs contained in Appendix A of Part 55 of this chapter. [38 FR 22221]

(9) A description of protection provided against pressurized thermal shock events, including projected values of the reference temperature for reactor vessel beltline materials as defined in § 50.61 (b)(1) and (b)(2). [50 FR 29937]

(c) *Physical security plan.* Each application for a license to operate a production or utilization facility shall include a physical security plan. The plan shall consist of two parts. Part I shall address vital equipment, vital areas, and isolation zones, and shall demonstrate how the applicant plans to comply with the requirements of Part 73 (and Part 11 of this chapter, if applicable, including the identification and description of jobs as required by § 11.11(a), at the proposed facility). Part II shall list tests, inspections, and other means to be used to demonstrate compliance with such requirements, if applicable. [45 FR 76566]

(d) *Safeguards contingency plan.* Each application for a license to operate a production or utilization facility that shall be subject to §§ 73.50, 73.55, or 73.60 of this chapter shall include a licensee safeguards contingency plan in accordance with the criteria set forth in Appendix C to 10 CFR Part 73. The safeguards contingency plan shall include plans for dealing with threats, thefts, and industrial sabotage, as defined in Part 73 of this chapter, relating to the special nuclear material and nuclear facilities licensed under this chapter and in the applicant's possession and control. Each application for such a license shall include the first four categories of information contained in the applicant's safeguards contingency plan. (The first four categories of information, as set forth in Appendix C to 10 CFR Part 73, are Background, Generic Planning Base, Licensee Planning Base, and Responsibility Matrix. The fifth category of information, Procedures, does not have to be submitted for approval.)[7] [43 FR 11962]

(e) Each applicant for a license to operate a production or utilization facility, who prepares a physical security plan, a safeguards contingency plan, or a guard qualification and training plan, shall protect the plans and other related Safeguards Information against unauthorized disclosure in accordance with the requirements of § 73.21 of this chapter, as appropriate. [46 FR 51718]

[7] A physical security plan that contains all the information required in both § 73.55 and Appendix C to Part 73 satisfies the requirement for a contingency plan.

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(f) *Additional TMI-related requirements.* In addition to the requirements of paragraph (a) of this section, each applicant for a light-water-reactor construction permit or manufacturing license whose application was pending as of February 16, 1982 shall meet the requirements in paragraphs (f) (1) through (3) of this section. This rule applies only to the pending applications by Duke Power Company (Perkins Nuclear Station Units 1, 2 and 3), Houston Lighting & Power Company (Allens Creek Nuclear Generating Station, Unit 1), Portland General Electric Company (Pebble Springs Nuclear Plant, Units 1 and 2), Public Service Company of Oklahoma (Black Fox Station, Units 1 and 2), Puget Sound Power & Light Company (Skagit/Hanford Nuclear Power Project, Units 1 and 2), and Offshore Power Systems (License to Manufacture Floating Nuclear Plants). The number of units that will be specified in the manufacturing license, if issued, will be that number whose start of manufacture as defined in the license application, can practically begin within a ten-year period commencing on the date of issuance of the manufacturing license, but in no event will that number be in excess of ten. The manufacturing license will require the plant design to be updated no later than five years after its approval. Paragraphs (f)(1)(xii), (2)(ix), and (3)(v) of this section, pertaining to hydrogen control measures, must be met by all applicants covered by this rule. However, the Commission may decide to impose additional requirements and the issue of whether compliance with these provisions, together with 10 CFR 50.44 and Criterion 50 of Appendix A to 10 CFR Part 50, is sufficient for issuance of the manufacturing license may be considered in the manufacturing license proceeding.

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(1) To satisfy the following requirements, the application shall provide sufficient information to describe the nature of the studies, how they are to be conducted, estimated submittal dates, and a program to ensure that the results of such studies are factored into the final design of the facility. All studies shall be completed no later than two years following issuance of the construction permit or manufacturing license.[2]

(i) Perform a plant/site specific probabilistic risk assessment, the aim of which is to seek such improvements in the reliability of core and containment heat removal systems as are significant and practical and do not impact excessively on the plant. (II.B.8)

(ii) Perform an evaluation of the proposed auxiliary feedwater system (AFWS), to include (applicable to PWR's only) (II.E.1.1):

(A) A simplified AFWS reliability analysis using event-tree and fault-tree logic techniques.

(B) A design review of AFWS.

(C) An evaluation of AFWS flow design bases and criteria.

(iii) Perform an evaluation of the potential for and impact of reactor coolant pump seal damage following small-break LOCA with loss of offsite power. If damage cannot be precluded, provide an analysis of the limiting small-break loss-of-coolant accident with subsequent reactor coolant pump seal damage. (II.K.2.16 and II.K.3.25)

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(iv) Perform an analysis of the probability of a small-break loss-of-coolant accident (LOCA) caused by a stuck-open power-operated relief valve (PORV). If this probability is a significant contributor to the probability of small-break LOCA's from all causes, provide a description and evaluation of the effect on small-break LOCA probability of an automatic PORV isolation system that would operate when the reactor coolant system pressure falls after the PORV has opened. (Applicable to PWR's only). (II.K.3.2)

(v) Perform an evaluation of the safety effectiveness of providing for separation of high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) system initiation levels so that the RCIC system initiates at a higher water level than the HPCI system, and of providing that both systems restart on low water level. (For plants with high pressure core spray systems in lieu of high pressure coolant injection systems, substitute the words, "high pressure core spray" for "high pressure coolant injection" and "HPCS" for "HPCI") (Applicable to BWR's only). (II.K.3.13)

(vi) Perform a study to identify practicable system modifications that would reduce challenges and failures of relief valves, without compromising the performance of the valves or other systems. (Applicable to BWR's only). (II.K.3.16)

(vii) Perform a feasibility and risk assessment study to determine the optimum automatic depressurization system (ADS) design modifications that would eliminate the need for manual activation to ensure adequate core cooling. (Applicable to BWR's only). (II.K.3.18)

(viii) Perform a study of the effect on all core-cooling modes under accident conditions of designing the core spray and low pressure coolant injection systems to ensure that the systems will automatically restart on loss of water level, after having been manually stopped, if an initiation signal is still present. (Applicable to BWR's only). (II.K.3.21)

(ix) Perform a study to determine the need for additional space cooling to ensure reliable long-term operation of the reactor core isolation cooling (RCIC) and high-pressure coolant injection (HPCI) systems, following a complete loss of offsite power to the plant for at least two (2) hours. (For plants with high pressure core spray systems in lieu of high pressure coolant injection systems, substitute the words, "high pressure core spray" for "high pressure coolant injection" and "HPCS" for "HPCI") (Applicable to BWR's only). (II.K.3.24)

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(x) Perform a study to ensure that the Automatic Depressurization System, valves, accumulators, and associated equipment and instrumentation will be capable of performing their intended functions during and following an accident situation, taking no credit for non-safety related equipment or instrumentation, and accounting for normal expected air (or nitrogen) leakage through valves. (Applicable to BWR's only). (II.K.3.28)

(xi) Provide an evaluation of depressurization methods, other than by full actuation of the automatic depressurization system, that would reduce the possibility of exceeding vessel integrity limits during rapid cooldown. (Applicable to BWR's only) (II.K.3.45)

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(xii) Perform an evaluation of alternative hydrogen control systems that would satisfy the requirements of paragraph (f)(2)(ix) of this section. As a minimum include consideration of a hydrogen ignition and post-accident inerting system. The evaluation shall include:

(A) A comparison of costs and benefits of the alternative systems considered.

(B) For the selected system, analyses and test data to verify compliance with the requirements of (f)(2)(ix) of this section.

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(C) For the selected system, preliminary design descriptions of equipmment, function, and layout.

(2) To satisfy the following requirements, the application shall provide sufficient information to demonstrate that the required actions will be satisfactorily completed by the operating license stage. This information is of the type customarily required to satisfy 10 CFR 50.35(a)(2) or to address unresolved generic safety issues.

(i) Provide simulator capability that correctly models the control room and includes the capability to simulate small-break LOCA's. (Applicable to construction permit applicants only) (I.A.4.2.)

(ii) Establish a program, to begin

[2] Alphanumeric designations correspond to the related action plan items in NUREG 0718 and NUREG 0660, "NRC Action Plan Developed as a Result of the TMI-2 Accident." They are provided herein for information only.

during construction and follow into operation, for integrating and expanding current efforts to improve plant procedures. The scope of the program shall include emergency procedures, reliability analyses, human factors engineering, crisis management, operator training, and coordination with INPO and other industry efforts. (Applicable to construction permit applicants only) (I.C.9)

(iii) Provide, for Commission review, a control room design that reflects state-of-the-art human factor principles prior to committing to fabrication or revision of fabricated control room panels and layouts. (I.D.1)

(iv) Provide a plant safety parameter display console that will display to operators a minimum set of parameters defining the safety status of the plant, capable of displaying a full range of important plant parameters and data trends on demand, and capable of indicating when process limits are being approached or exceeded. (I.D.2)

(v) Provide for automatic indication of the bypassed and operable status of safety systems. (I.D.3)

(vi) Provide the capability of high point venting of noncondensible gases from the reactor coolant system, and other systems that may be required to maintain adequate core cooling. Systems to achieve this capability shall be capable of being operated from the control room and their operation shall not lead to an unacceptable increase in the probability of loss-of-coolant accident or an unacceptable challenge to containment integrity. (II.B.1)

(vii) Perform radiation and shielding design reviews of spaces around systems that may, as a result of an accident, contain TID 14844 source term radioactive materials, and design as necessary to permit adequate access to important areas and to protect safety equipment from the radiation environment. (II.B.2)

(viii) Provide a capability to promptly obtain and analyze samples from the reactor coolant system and containment that may contain TID 14844 source term radioactive materials without radiation exposures to any individual exceeding 5 rem to the whole-body or 75 rem to the extremities. Materials to be analyzed and quantified include certain radionuclides that are indicators of the degree of core damage (e.g., noble gases, iodines and cesiums, and non-volatile isotopes), hydrogen in the containment atmosphere, dissolved gases chloride, and boron concentrations. (II.B.3)

(ix) Provide a system for hydrogen control that can safely accommodate hydrogen generated by the equivalent of a 100% fuel-clad metal water reaction. Preliminary design information on the tentatively preferred system option of those being evaluated in paragraph (1)(xii) of this section is sufficient at the construction permit stage. The hydrogen control system and associated systems shall provide, with reasonable assurance, that: (II.B.8)

(A) Uniformly distributed hydrogen concentrations in the containment do not exceed 10% during and following an accident that releases an equivalent amount of hydrogen as would be generated from a 100% fuel clad metal-water reaction, or that the post-accident atmosphere will not support hydrogen combustion.

(B) Combustible concentrations of hydrogen will not collect in areas where unintended combustion or detonation could cause loss of containment integrity or loss of appropriate mitigating features.

(C) Equipment necessary for achieving and maintaining safe shutdown of the plant and maintaining containment integrity will perform its safety function during and after being exposed to the environmental conditions attendant with the release of hydrogen generated by the equivalent of a 100% fuel-clad metal water reaction including the environmental conditions created by activation of the hydrogen control system.

(D) If the method chosen for hydrogen control is a post-accident inerting system, inadvertent actuation of the system can be safely accommodated during plant operation.

(x) Provide a test program and associated model development and conduct tests to qualify reactor coolant system relief and safety valves and, for PWR's, PORV block valves, for all fluid conditions expected under operating conditions, transients and accidents. Consideration of anticipated transients without scram (ATWS) conditions shall be included in the test program. Actual testing under ATWS conditions need not be carried out until subsequent phases of the test program are developed. (II.D.1)

(xi) Provide direct indication of relief and safety valve position (open or closed) in the control room. (II.D.3)

(xii) Provide automatic and manual auxiliary feedwater (AFW) system initiation, and provide auxiliary feedwater system flow indication in the control room. (Applicable to PWR's only) (II.E.1.2)

(xiii) Provide pressurizer heater power supply and associated motive and control power interfaces sufficient to establish and maintain natural circulation in hot standby conditions with only onsite power available. (Applicable to PWR's only) (II.E.3.1)

(xiv) Provide containment isolation systems that: (II.E.4.2)

(A) Ensure all non-essential systems are isolated automatically by the containment isolation system.

(B) For each non-essential penetration (except instrument lines) have two isolation barriers in series.

(C) Do not result in reopening of the containment isolation valves on resetting of the isolation signal.

(D) Utilize a containment set point pressure for initiating containment isolation as low as is compatible with normal operation.

(E) Include automatic closing on a high radiation signal for all systems that provide a path to the environs.

(xv) Provide a capability for containment purging/venting designed to minimize the purging time consistent with ALARA principles for occupational exposure. Provide and demonstrate high assurance that the purge system will reliably isolate under accident conditions. (II.E.4.4)

(xvi) Establish a design criterion for the allowable number of actuation cycles of the emergency core cooling system and reactor protection system consistent with the expected occurrence rates of severe overcooling events (considering both anticipated transients and accidents). (Applicable to B&W designs only). (II.E.5.1)

(xvii) Provide instrumentation to measure, record and readout in the control room: (A) containment pressure, (B) containment water level, (C) containment hydrogen concentration, (D) containment radiation intensity (high level), and (E) noble gas effluents at all potential, accident release points. Provide for continuous sampling of radioactive iodines and particulates in gaseous effluents from all potential accident release points, and for onsite capability to analyze and measure these samples. (II.F.1)

(xviii) Provide instruments that provide in the control room an unambiguous indication of inadequate core cooling, such as primary coolant saturation meters in PWR's, and a suitable combination of signals from indicators of coolant level in the reactor vessel and in-core thermocouples in PWR's and BWR's. (II.F.2)

(xix) Provide instrumentation adequate for monitoring plant conditions following an accident that includes core damage. (II.F.3)

(xx) Provide power supplies for pressurizer relief valves, block valves, and level indicators such that: (A) Level indicators are powered from vital buses; (B) motive and control power connections to the emergency power sources are through devices qualified in accordance with requirements applicable to systems important to safety and (C) electric power is provided from emergency power sources. (Applicable to PWR's only). (II.G.1)

(xxi) Design auxiliary heat removal systems such that necessary automatic and manual actions can be taken to

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ensure proper functioning when the main feedwater system is not operable. (Applicable to BWR's only). (II.K.1.22)

(xxii) Perform a failure modes and effects analysis of the integrated control system (ICS) to include consideration of failures and effects of input and output signals to the ICS. (Applicable to B&W-designed plants only). (II.K.2.9)

(xxiii) Provide, as part of the reactor protection system, an anticipatory reactor trip that would be actuated on loss of main feedwater and on turbine trip. (Applicable to B&W-designed plants only). (II.K.2.10)

(xxiv) Provide the capability to record reactor vessel water level in one location on recorders that meet normal post-accident recording requirements. (Applicable to BWR's only). (II.K.3.23)

(xxv) Provide an onsite Technical Support Center, an onsite Operational Support Center, and, for construction permit applications only, a nearsite Emergency Operations Facility. (III.A.1.2).

(xxvi) Provide for leakage control and detection in the design of systems outside containment that contain (or might contain) TID 14844 source term radioactive materials following an accident. Applicants shall submit a leakage control program, including an initial test program, a schedule for re-testing these systems, and the actions to be taken for minimizing leakage from such systems. The goal is to minimize potential exposures to workers and public, and to provide reasonable assurance that excessive leakage will not prevent the use of systems needed in an emergency. (III.D.1.1)

(xxvii) Provide for monitoring of inplant radiation and airborne radioactivity as appropriate for a broad range of routine and accident conditions. (III.D.3.3)

(xxviii) Evaluate potential pathways for radioactivity and radiation that may lead to control room habitability problems under accident conditions resulting in a TID 14844 source term release, and make necessary design provisions to preclude such problems. (III.D.3.4)

(3) To satisfy the following requirements, the application shall provide sufficient information to demonstrate that the requirement has been met. This information is of the type customarily required to satisfy paragraph (a)(1) of this section or to address the applicant's technical qualifications and management structure and competence.

(i) Provide administrative procedures for evaluating operating, design and construction experience and for ensuring that applicable important industry experiences will be provided in a timely manner to those designing and constructing the plant. (I.C.5)

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(ii) Ensure that the quality assurance (QA) list required by Criterion II, App. B, 10 CFR Part 50 includes all structures, systems, and components important to safety. (I.F.1)

(iii) Establish a quality assurance (QA) program based on consideration of: (A) Ensuring independence of the organization performing checking functions from the organization responsible for performing the functions; (B) performing quality assurance/quality control functions at construction sites to the maximum feasible extent; (C) including QA personnel in the documented review of and concurrence in quality related procedures associated with design, construction and installation; (D) establishing criteria for determining QA programmatic requirements; (E) establishing qualification requirements for QA and QC personnel; (F) sizing the QA staff commensurate with its duties and responsibilities; (G) establishing procedures for maintenance of "as-built" documentation; and (H) providing a QA role in design and analysis activities. (I.F.2)

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(iv) Provide one or more dedicated containment penetrations, equivalent in size to a single 3-foot diameter opening, in order not to preclude future installation of systems to prevent containment failure, such as a filtered vented containment system. (II.B.8)

(v) Provide preliminary design information at a level of detail consistent with that normally required at the construction permit stage of review sufficient to demonstrate that: (II.B.8)

(A)(*1*) Containment integrity will be maintained (i.e., for steel containments by meeting the requirements of the ASME Boiler and Pressure Vessel Code, Section III, Division 1, Subsubarticle NE-3220, Service Level C Limits, except that evaluation of instability is not required, considering pressure and dead load alone. For concrete containments by meeting the requirements of the ASME Boiler Pressure Vessel Code, Section III, Division 2 Subsubarticle CC-3720, Factored Load Category, considering pressure and dead load alone) during an accident that releases hydrogen generated from 100% fuel clad metal-water reaction accompanied by either hydrogen burning or the added pressure from post-accident inerting assuming carbon dioxide is the inerting agent. As a minimum, the specific code requirements set forth above appropriate for each type of containment will be met for a combination of dead load and an internal pressure of 45 psig. Modest deviations from these criteria will be considered by the staff, if good cause is shown by an applicant. Systems necessary to ensure containment integrity shall also be demonstrated to perform their function under these conditions.

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(*2*) Subarticle NE-3220, Division 1, and subarticle CC-3720, Division 2, of Section III of the July 1, 1980 ASME Boiler and Pressure Vessel Code, which are referenced in paragraph (f)(3)(v)(A)(*1*) and (f)(3)(v)(B)(*1*) of this section, were approved for incorporation by reference by the Director of the Office of the Federal Register. A notice of any changes made to the material incorporated by reference will be published in the Federal Register. Copies of the ASME Boiler and Pressure Vessel Code may be purchased from the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th St., New York, NY 10017. It is also available for inspection at the Nuclear Regulatory Commission's Public Document Room, 1717 H St., NW., Washington, D.C.

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(B) (*1*) Containment structure loadings produced by an inadvertent full actuation of a post-accident inerting hydrogen control system (assuming carbon dioxide), but not including seismic or design basis accident loadings will not produce stresses in steel containments in excess of the limits set forth in the ASME Boiler and Pressure Vessel Code, Section III, Division 1, Subsubarticle NE-3220, Service Level A Limits, except that evaluation of instability is not required (for concrete containments the loadings specified above will not produce strains in the containment liner in excess of the limits set forth in the ASME Boiler and Pressure Vessel Code, Section III, Division 2, Subsubarticle CC-3720, Service Load Category. (*2*) The containment has the capability to safely withstand pressure tests at 1.10 and 1.15 times (for steel and concrete containments, respectively) the pressure calculated to result from carbon dioxide inerting.

(vi) For plant designs with external hydrogen recombiners, provide redundant dedicated containment penetrations so that, assuming a single failure, the recombiner systems can be connected to the containment atmosphere. (II.E.4.1)

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(vii) Provide a description of the management plan for design and construction activities, to include: (A) the organizational and management structure singularly responsible for direction of design and construction of the proposed plant; (B) technical resources director by the applicant; (C) details of the interaction of design and construction within the applicant's organization and the manner by which the applicant will ensure close integration of the architect engineer and the nuclear steam supply vendor; (D)

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proposed procedures for handling the transition to operation; (E) the degree of top level management oversight and technical control to be exercised by the applicant during design and construction, including the preparation and implementation of procedures necessary to guide the effort. (II.J.3.1)

47 FR 15569

(9) Conformance with the Standard Review Plan (SRP).

(1)(i) Applications for light water cooled nuclear power plant operating licenses docketed after May 17, 1982 shall include an evaluation of the facility against the Standard Review Plan (SRP) in effect on May 17, 1982 or the SRP revision in effect six months prior to the docket date of the application, whichever is later.

(ii) Applications for light water cooled nuclear power plant construction permits, manufacturing licenses, and preliminary or final design approvals for standard plants docketed after May 17, 1982 shall include an evaluation of the facility against the SRP in effect on May 17, 1982 or the SRP revision in effect six months prior to the docket date of the application, whichever is later.

(2) The evaluation required by this section shall include an identification and description of all differences in design features, analytical techniques, and procedural measures proposed for a facility and those corresponding features, techniques, and measures given in the SRP acceptance criteria. Where such a difference exists, the evaluation shall discuss how the alternative proposed provides an acceptable method of complying with those rules or regulations of Commission, or portions thereof, that underlie the corresponding SRP acceptance criteria.

(3) The SRP was issued to establish criteria that the NRC staff intends to use in evaluating whether an applicant/licensee meets the Commission's regulations. The SRP is not a substitute for the regulations, and compliance is not a requirement. Applicants shall identify differences from the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP criteria provide an acceptable method of complying with the Commission's regulations.

40 FR 58847

§ 50.34a Design objectives for equipment to control releases of radioactive material in effluents—nuclear power reactors.

(a) An application for a permit to construct a nuclear power reactor shall include a description of the preliminary design of equipment to be installed to maintain control over radioactive materials in gaseous and liquid effluents produced during normal reactor operations, including expected operational occurrences. In the case of an application filed on or after January 2, 1971, the application shall also identify the design objectives, and the means to be employed, for keeping levels of radioactive material in effluents to unrestricted areas as low as is reasonably achievable. The term "as low as is reasonably achievable" as used in this part means as low as is reasonably achievable taking into account the state of technology, and the economics of improvements in relation to benefits to the public health and safety and other societal and socioeconomic considerations, and in relation to the utilization of atomic energy in the public interest. The guides set out in Appendix I to this part provide numerical guidance on design objectives for light-water-cooled nuclear power reactors to meet the requirements that radioactive material in effluents released to unrestricted areas be kept as low as is reasonably achievable. These numerical guides for design objectives and limiting conditions for operation are not to be construed as radiation protection standards.

35 FR 18385

(b) Each application for a permit to construct a nuclear power reactor shall include:

(1) A description of the preliminary design of equipment to be installed pursuant to paragraph (a) of this section;

(2) An estimate of:

(i) The quantity of each of the principal radio-nuclides expected to be released annually to unrestricted areas in liquid effluents produced during normal reactor operations; and

(ii) The quantity of each of the principal radio-nuclides of the gases, halides, and particulates expected to be released annually to unrestricted areas in gaseous effluents produced during normal reactor operations.

(3) A general description of the provisions for packaging, storage, and shipment offsite of solid waste containing radioactive materials resulting from treatment of gaseous and liquid effluents and from other sources.

(c) Each application for a license to operate a nuclear power reactor shall include (1) a description of the equipment and procedures for the control of gaseous and liquid effluents and for the maintenance and use of equipment installed in radioactive waste systems, pursuant to paragraph (a) of this section; an (2) a revised estimate of the information required in paragraph (b)(2) of this section if the expected releases and exposures differ significantly from the estimates submitted in the application for a construction permit.

35 FR 5317

§ 50.35 Issuance of construction permits.[1]

(a) When an applicant has not supplied initially all of the technical information required to complete the application and support the issuance of a construction permit which approves all proposed design features, the Commission may issue a construction permit if the Commission finds that (1) the applicant has described the proposed design of the facility, including, but not limited to, the principal architectural and engineering criteria for the design, and has identified the major features or components incorporated therein for the protection of the health and safety of the public; (2) such further technical or design information as may be required to complete the safety analysis, and which can reasonably be left for later consideration, will be supplied in the final safety analysis report; (3) safety features or components, if any, which require research and development have been described by the applicant and the applicant has identified, and there will be conducted, a research and development program reasonably designed to resolve any safety questions associated with such features or components; and that (4) on the basis of the foregoing, there is reasonable assurance that, (i) such safety questions will be satisfactorily resolved at or before the latest date stated in the application for completion of construction of the proposed facility, and (ii) taking into consideration the site criteria contained in Part 100 of this chapter, the proposed facility can be constructed and operated at the proposed location without undue risk to the health and safety of the public.

NOTE: When an applicant has supplied initially all of the technical information required to complete the application, including the final design of the facility, the findings required above will be appropriately modified to reflect that fact.

[1] The Commission may issue a provisional construction permit pursuant to the regulations in this part in effect on March 30, 1970, for any facility for which a notice of hearing on an application for a provisional construction permit has been published on or before that date.

(b) A construction permit will constitute an authorization to the applicant to proceed with construction but will not constitute Commission approval of the safety of any design feature or specification unless the applicant specifically requests such approval and such approval is incorporated in the permit. The applicant, at his option, may request such approvals in the construction permit or, from time to time, by amendment of his construction permit. The Commission may, in its discretion, incorporate in any construction permit provisions requiring the applicant to furnish periodic reports of the progress and results of research and development programs designed to resolve safety questions. [35 FR 5317]

(c) Any construction permit will be subject to the limitation that a license authorizing operation of the facility will not be issued by the Commission until (1) the applicant has submitted to the Commission, by amendment to the application, the complete final safety analysis report, portions of which may be submitted and evaluated from time to time, and (2) the Commission has found that the final design provides reasonable assurance that the health and safety of the public will not be endangered by operation of the facility in accordance with the requirements of the license and the regulations in this chapter. [27 FR 12915]

§ 50.36 Technical specifications.

(a) Each applicant for a license authorizing operation of a production or utilization facility shall include in his application proposed technical specifications in accordance with the requirements of this section. A summary statement of the bases or reasons for such specifications, other than those covering administrative controls, shall also be included in the application, but shall not become part of the technical specifications.

(b) Each license authorizing operation of a production or utilization facility of a type described in § 50.21 or § 50.22 will include technical specifications. The technical specifications will be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto, submitted pursuant to § 50.34. The Commission may include such additional technical specifications as the Commission finds appropriate. [33 FR 18610]

(c) Technical specifications will include items in the following categories:

(1) *Safety limits, limiting safety system settings, and limiting control settings.* (i)(A) Safety limits for nuclear reactors are limits upon important process variables which are found to be necessary to reasonably protect the integrity of certain of the physical barriers which guard against the uncontrolled release of radioactivity. If any safety limit is exceeded, the reactor shall be shut down. The licensee shall notify the Commission, review the matter and record the results of the review, including the cause of the condition and the basis for corrective action taken to preclude reoccurrence. Operation shall not be resumed until authorized by the Commission.

(B) Safety limits for fuel reprocessing plants are those bounds within which the process variables must be maintained for adequate control of the operation and which must not be exceeded in order to protect the integrity of the physical system which is designed to guard against the uncontrolled release of radioactivity. If any safety limit for a fuel reprocessing plant is exceeded, corrective action shall be taken as stated in the technical specification or the affected part of the process, or the entire process if required, shall be shut down, unless such action would further reduce the margin of safety. The licensee shall notify the Commission, review the matter and record the results of the review, including the cause of the condition and the basis for corrective action taken to preclude reoccurrence. If a portion of the process or the entire process has been shut down, operation shall not be resumed until authorized by the Commission. [39 FR 24626]

(ii)(A) Limiting safety system settings for nuclear reactors are settings for automatic protective devices related to those variables having significant safety functions. Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting shall be so chosen that automatic protective action will correct the abnormal situation before a safety limit is exceeded. If, during operation, the automatic safety system does not function as required, the licensee shall take appropriate action, which may include shutting down the reactor. He shall notify the Commission, review the matter and record the results of the review, including the cause of the condition and the basis for corrective action taken to preclude reoccurrence.

(B) Limiting control settings for fuel reprocessing plants are settings for automatic alarm or protective devices related to those variables having significant safety functions. Where a limiting control setting is specified for a variable on which a safety limit has been placed, the setting shall be so chosen that protective action, either automatic or manual, will correct the abnormal situation before a safety limit is exceeded. If, during operation, the automatic alarm or protective devices do not function as required, the licensee shall take appropriate action to maintain the variables within the limiting control-setting values and to repair promptly the automatic devices or to shut down the affected part of the process and, if required, to shut down the entire process for repair of automatic devices. The licensee shall notify the Commission, review the matter, and record the results of the review, including the cause of the condition and the basis for corrective action taken to preclude reoccurrence.

(2) *Limiting conditions for operation.* Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specification until the condition can be met. When a limiting condition for operation of any process step in the system of a fuel reprocessing plant is not met, the licensee shall shut down that part of the operation or follow any remedial action permitted by the technical specification until the condition can be met. In the case of either a nuclear reactor or a fuel reprocessing plant, the licensee shall notify the Commission, review the matter, and record the results of the review, including the cause of the condition and the basis for corrective action taken to preclude reoccurrence. [39 FR 24626]

(3) *Surveillance requirements.* Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within the safety limits, and that the limiting conditions of operation will be met.

(4) *Design features.* Design features to be included are those features of the facility such as materials of construction and geometric arrangements, which, if altered or modified, would have a significant effect on safety and are not covered in categories described in paragraphs (c) (1), (2), and (3) of this section. [33 FR 18610]

(5) *Administrative controls.* Administrative controls are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner. [33 FR 18610]

(6) *Initial Notification.* Reports made to the Commission by licensees in response to the requirements of this section must be made as follows: [48 FR 33850]

(i) Licensees that have an installed Emergency Notification System shall make the initial notification to the NRC Operations Center in accordance with § 50.72 of this part.

(ii) All other licensees shall make the initial notification by telephone to the Administrator of the appropriate NRC Regional Office listed in Appendix D, Part 20, of this chapter.

(7) *Written reports.* Holders of an operating license for a nuclear power plant shall submit a written report to the Commission concerning the incidents included in paragraphs (c) (1) and (2) of this section in accordance with the procedures described in § 50.73 (b), (c), (d), (e), and (g) of this part. Incidents reported in accordance with §50.73 of this part need not also be reported under paragraphs (c) (1) or (2) of this section.

(d)(1) This section shall not be deemed to modify the technical specifications included in any license issued prior to January 16, 1969. A license in which technical specifications have not been designated shall be deemed to include the entire safety analysis report as technical specifications. [33 FR 18610]

(2) An applicant for a license authorizing operation of a production or utilization facility to whom a construction permit has been issued prior to January 16, 1969, may submit technical specifications in accordance with this section, or in accordance with the requirements of this part in effect prior to January 16, 1969.

(3) At the initiative of the Commission or the licensee, any license may be amended to include technical specifications of the scope and content which would be required if a new license were being issued.

§ 50.36a Technical specifications on effluents from nuclear power reactors.

[35 FR 18385]

(a) In order to keep releases of radioactive materials to unrestricted areas during normal reactor operations, including expected operational occurrences, as low as is reasonably achievable, each license authorizing operation of a nuclear power reactor will include technical specifications that, in addition to requiring compliance with applicable provisions of § 20.106 of this chapter, require: [35 FR 18385]

(1) That operating procedures developed pursuant to § 50.34a(c) for the control of effluents be established and followed and that equipment installed in the radioactive waste system, pursuant to § 50.34(a) be maintained and used.

(2) The submission of a report to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter within sixty (60) days after January 1 and July 1 of each year specifying the quantity of each of the principal radionuclides released to unrestricted areas in liquid and in gaseous effluents during the previous six (6) months of operation, and such other information as may be required by the Commission to estimate maximum potential annual radiation doses to the public resulting from effluent releases. Copies of such report shall be sent to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. [41 FR 16445]

If quantities of radioactive materials released during the reporting period are significantly above design objectives, the report shall cover this specifically. On the basis of such reports and any additional information the Commission may obtain from the licensee or others, the Commission may from time to time require the licensee to take such action as the Commission deems appropriate. [36 FR 18385]

(b) In establishing and implementing the operating procedures described in paragraph (a) of this section, the licensee shall be guided by the following considerations: Experience with the design, construction and operation of nuclear power reactors indicates that compliance with the technical specifications described in this section will keep average annual releases of radioactive material in effluents at small percentages of the limits specified in § 20.106 of this chapter and in the operating license. At the same time, the licensee is permitted the flexibility of operation, compatible with considerations of health and safety, to assure that the public is provided a dependable source of power even under unusual operating conditions which may temporarily result in releases higher than such small percentages, but still within the limits specified in § 20.106 of this chapter and the operating license. It is expected that in using this operational flexibility under unusual operating conditions, the licensee will exert his best efforts to keep levels of radioactive material in effluents as low as is reasonably achievable. [40 FR 58847]

The guides set out in Appendix I provide numerical guidance on limiting conditions for operation for light-water-cooled nuclear power reactors to meet the requirement that radioactive materials in effluents released to unrestricted areas be kept as low as is reasonably achievable. [40 FR 58847]

§ 50.36b Environmental conditions.

[49 FR 9352]

Each license authorizing operation of a production or utilization facility which is of a type described in § 50.21(b) (2) or (3) or § 50.22 or is a testing facility may include conditions to protect the environment to be set out in an attachment to the license which is incorporated in and made a part of the license. These conditions will be derived from information contained in the environmental report and the supplement to the environmental report submitted pursuant to §§ 51.50 and 51.53 of this chapter as analyzed and evaluated in the NRC record of decision, and will identify the obligations of the licensee in the environmental area, including, as appropriate, requirements for reporting and keeping records of environmental data, and any conditions and monitoring requirements for the protection of the nonaquatic environment.

§ 50.37 Agreement limiting access to Restricted Data.

[21 FR 355]

As part of his application and in any event prior to the receipt of Restricted Data or the issuance of a license or construction permit, the applicant shall agree in writing that he will not permit any individual to have access to Restricted Data until the Civil Service Commission shall have made an investigation and report to the Commission on the character, associations, and loyalty of such individual, and the Commission shall have determined that permitting such person to have access to Restricted Data will not endanger the common defense and security. The agreement of the applicant in this regard shall be deemed part of the license or construction permit, whether so stated therein or not.

§ 50.38 Ineligibility of certain applicants.

[43 FR 6915]

Any person who is a citizen, national, or agent of a foreign country, or any corporation, or other entity which the Commission knows or has reason to believe is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government, shall be ineligible to apply for and obtain a license.

§ 50.39 Public inspection of applications.

Applications and documents submitted to the Commission in connection with applications may be made available for public inspection in accordance with the provisions of the regulations contained in Part 2 of this chapter.

STANDARDS FOR LICENSES AND CONSTRUCTION PERMITS

21 FR 355

§ 50.40 Common standards.

In determining that a license will be issued to an applicant, the Commission will be guided by the following considerations:

(a) The processes to be performed, the operating procedures, the facility and equipment, the use of the facility, and other technical specifications, or the proposals, in regard to any of the foregoing collectively provide reasonable assurance that the applicant will comply with the regulations in this chapter, including the regulations in Part 20, and that the health and safety of the public will not be endangered.

49 FR 35747

(b) The applicant is technically and financially qualified to engage in the proposed activities in accordance with the regulations in this chapter. However, no consideration of financial qualification is necessary for an electric utility applicant for an operating license for a utilization facility of the type described in § 50.21(b) or § 50.22.

21 FR 355

(c) The issuance of a license to the applicant will not, in the opinion of the Commission, be inimical to the common defense and security or to the health and safety of the public.

49 FR 9352

(d) Any applicable requirements of subpart A of Part 51 have been satisfied.

§ 50.41 Additional standards for class 104 licenses.

21 FR 355

In determining that a class 104 license will be issued to an applicant, the Commission will, in addition to applying the standards set forth in § 50.40 be guided by the following considerations:

(a) The Commission will permit the widest amount of effective medical therapy possible with the amount of special nuclear material available for such purposes.

(b) The Commission will permit the conduct of widespread and diverse research and development.

35 FR 19655

(c) An application for a class 104 operating license as to which a person who intervened or sought by timely written notice to the Commission to intervene in the construction permit proceeding for the facility to obtain a determination of antitrust considerations or to advance a jurisdictional basis for such determination has requested an antitrust review under section 105 of the Act within 25 days after the date of publication in the FEDERAL REGISTER of notice of filing of the application for an operating license or December 19, 1970, whichever is later, is also subject to the provisions of § 50.42(b).

§ 50.42 Additional standards for class 103 licenses.

21 FR 355

In determining whether a class 103 license will be issued to an applicant, the Commission will, in addition to applying the standards set forth in § 50.40, be guided by the following considerations:

(a) The proposed activities will serve a useful purpose proportionate to the quantities of special nuclear material or source material to be utilized.

35 FR 19655

(b) Due account will be taken of the advice provided by the Attorney General, pursuant to subsection 105c of the Act, and to such evidence as may be provided during any proceedings in connection with the antitrust aspects of the application. For this purpose, the Commission will promptly transmit to the Attorney General a copy of the license application, and request such advice as the Attorney General determines to be appropriate in regard to the finding to be made by the Commission as to whether the proposed license would create or maintain a situation inconsistent with the antitrust laws, as specified in subsection 105a of the Act: *Provided*, That this requirement will not apply with respect to the types of class 103 licenses which the Commission, with the approval of the Attorney General, may determine would not significantly affect the applicant's activities under the antitrust laws: *And provided further*, That this requirement will not apply to an application for a license to operate a production or utilization facility for which a class 103 construction permit was issued unless the Commission, after consultation with the Attorney General, determines such review is advisable on the ground that significant changes in the licensee's activities or proposed activities have occurred subsequent to the previous review by the Attorney General and the Commission. Upon receipt of the Attorney General's advice, the Commission will cause such advice to be published in the FEDERAL REGISTER. After consideration of the antitrust aspects of the application, the Commission, if it finds that the license to be issued or continued, would create or maintain a situation inconsistent with the antitrust laws as specified in subsection 105a of the Act, will consider, in determining whether a license should be issued or continued, such other factors as the Commission in its judgment deems necessary to protect the public interest, including the need for power in the affected area.[1]

§ 50.43 Additional standards and provisions affecting class 103 licenses for commercial power.

In addition to applying the standards set forth in §§ 50.40 and 50.42, in the case of a class 103 license for a facility for the generation of commercial power:

35 FR 19655

(a) The Commission will give notice in writing of each application to such regulatory agency as may have jurisdiction over the rates and services incident to the proposed activity; will publish notice of the application in such trade or news publications as it deems appropriate to give reasonable notice to municipalities, private utilities, public bodies, and cooperatives which might have a potential interest in such utilization or production facility; and will publish notice of the application once each week for 4 consecutive weeks in the FEDERAL REGISTER. No license will be issued by the Commission prior to the giving of such notices and until 4 weeks after the last publication in the FEDERAL REGISTER.

21 FR 355

(b) If there are conflicting applications for a limited opportunity for such license, the Commission will give preferred consideration in the following order: First, to applications submitted by public or cooperative bodies for facilities to be located in high cost power areas in the United States; second, to applications submitted by others for facilities to be located in such areas; third, to applications submitted by public or cooperative bodies for facilities to be located in other than high cost power areas, and, fourth, to all other applicants.

(c) The licensee who transmits electric energy in interstate commerce, or sells it at wholesale in interstate commerce, shall be subject to the regulatory provisions of the Federal Power Act.

(d) Nothing herein shall preclude any government agency, now or hereafter authorized by law to engage in the production, marketing, or distribution of electric energy, if otherwise qualified, from obtaining a license for the construction and operation of a utilization facility for the primary purpose of producing electric energy for disposition for ultimate public consumption.

[1] As permitted by subsection 105c(8) of the Act, with respect to proceedings in which an application for a construction permit was filed prior to Dec. 19, 1970, and proceedings in which a written request for antitrust review of an application for an operating license to be issued under section 104b has been made by a person who intervened or sought by timely written notice to the Atomic Energy Commission to intervene in the construction permit proceeding for the facility to obtain a determination of antitrust considerations or to advance a jurisdictional basis for such determination within 25 days after the date of publication in the FEDERAL REGISTER of notice of filing of the application for an operating license or Dec. 19, 1970, whichever is later, the Commission may issue a construction permit or operating license in advance of consideration of, and findings with respect to the antitrust aspects of the application, provided that the permit or license so issued contains the condition specified in § 50.55b.

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§ 50.44 Standards for combustible gas control system in light water cooled power reactors.

(a) Each boiling or pressurized light-water nuclear power reactor fueled with oxide pellets within cylindrical zircaloy cladding, shall, as provided in paragraphs (b) through (d) of this section, include means for control of hydrogen gas that may be generated, following a postulated loss-of-coolant accident (LOCA), by (1) metal-water reaction involving the fuel cladding and the reactor coolant, (2) radiolytic decomposition of the reactor coolant, and (3) corrosion of metals. 13 FR 501

(b) Each boiling or pressurized light-water nuclear power reactor fueled with oxide pellets within cylindrical zircaloy cladding shall be provided with the capability for (1) measuring the hydrogen concentration in the containment, (2) insuring a mixed atmosphere in the containment, and (3) controlling combustible gas concentrations in the containment following a postulated LOCA.

(c)(1) For each boiling or pressurized light-water nuclear power reactor fueled with oxide pellets within cylindrical zircaloy cladding, it shall be shown that during the time period following a postulated LOCA but prior to effective operation of the combustible gas control system, either: (i) An uncontrolled hydrogen-oxygen recombination would not take place in the containment; or (ii) the plant could withstand the consequences of uncontrolled hydrogen-oxygen recombination without loss of safety function.

(2) If the conditions set out in paragraph (c)(1) of this section cannot be shown, the containment shall be provided with an inerted or an oxygen deficient atmosphere in order to provide protection against hydrogen burning and explosions during the time period specified in paragraph (c)(1) of this section. 46 FR 58484

(3) Notwithstanding paragraphs (c)(1) and (c)(2) of this section:

(i) Effective May 4, 1982 or 6 months after initial criticality, whichever is later, an inerted atmosphere shall be provided for each boiling light-water nuclear power reactor with a Mark I or Mark II type containment; and

(ii) By the end of the first scheduled outage beginning after July 5, 1982 and of sufficient duration to permit required modifications, each light-water nuclear power reactor that relies upon a purge/repressurization system as the primary means for controlling combustible gases following a LOCA shall be provided with either an internal recombiner or the capability to install an external recombiner following the start of an accident. The internal or external recombiners must meet the combustible gas control requirements in paragraph (d) of this section. The containment penetrations used for external recombiners must either be:

(A) dedicated to that service only, conform to the requirements of Criteria 54 and 56 of Appendix A of this part, be designed against postulated single failures for containment isolation purposes, and be sized to satisfy the flow requirements of the external recombiners, or

(B) of a combined design for use by either external recombiners or purge/repressurization systems and other systems, conform to the requirements of criteria 54 and 56 of Appendix A of this part, be designed against postulated single failures both for containment isolation purposes and for operation of the external recombiners or purge/repressurization systems, and be sized to satisfy the flow requirements of the external recombiners or purge repressurization systems.

(iii) To provide improved operational capability to maintain adequate core cooling following an accident, by the end of the first scheduled outage beginning after July 1, 1982 and of sufficient duration to permit required modifications, each light-water nuclear power reactor shall be provided with high point vents for the reactor coolant system, for the reactor vessel head, and for other systems required to maintain adequate core cooling if the accumulation of noncondensible gases would cause the loss of function of these systems. (High point vents are not required, however, for the tubes in U-tube steam generators.) The high point vents must be remotely operated from the control room. Since these vents form a part of the reactor coolant pressure boundary, the design of the vents and associated controls, instruments and power sources must conform to the requirements of Appendix A and Appendix B of this part. In particular, the vent system shall be designed to ensure a low probability that (A) the vents will not perform their safety functions and (B) there would be inadvertent or irreversible actuation of a vent. Furthermore, the use of these vents during and following an accident must not aggravate the challenge to the containment or the course of the accident. 46 FR 58484

(iv) (A) Each licensee with a boiling light-water nuclear power reactor with a Mark III type of containment and each licensee with a pressurized light-water nuclear power reactor with an ice condenser type of containment issued a construction permit before March 28, 1979, shall provide its nuclear power reactor with a hydrogen control system justified by a suitable program of experiment and analysis. The hydrogen control system must be capable of handling without loss of containment structural integrity an amount of hydrogen equivalent to that generated from a metal-water reaction involving 75% of the fuel cladding surrounding the active fuel region (excluding the cladding surrounding the plenum volume). 50 FR 3498

(B) Containment structural integrity must be demonstrated by use of an analytical technique that is accepted by the NRC staff. This demonstration must include sufficient supporting justification to show that the technique describes the containment response to the structural loads involved. This method could include the use of actual material properties with suitable margins to account for uncertainties in modeling, in material properties, in construction tolerances, and so on. Another method could include a showing that the following specific criteria of the ASME Boiler and Pressure Vessel Code are met:

(*1*) That steel containments meet the requirements of the ASME Boiler and Pressure Vessel Code (Edition and Addenda as incorporated by reference in paragraph 50.55a(b)(1) of this part), specifically in Section III, Division 1, Subsubarticle NE-3220, Service Level C Limits, considering pressure and dead load alone (evaluation of instability is not required); and

(*2*) That concrete containments meet the requirements of the ASME Boiler and Pressure vessel Code, Section III, Division 2, Subsubarticle CC-3720, Factored Load Category, considering pressure and dead load alone. 50 FR 3498

(C) Subsubarticle NE-3220, Divisin 1, and Subsubarticle CC-3720, Division 2, of Section III of the ASME Boiler and Pressure Vessel Code, referenced in paragraphs (c)(3)(iv)(B)(*1*) and (c)(3)(iv)(B)(*2*) of this section, have been approved for incorporation by reference by the Director of the Office of the Federal Register. A notice of any changes made to the material incorporated by reference will be published in the Federal Register. Copies of the ASME Boiler and Pressure Vessel Code may be purchased from the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, N.Y. 10017. It is also available for inspection at the Nuclear Regulatory Commission's Public Document Room, 1717 H Street N.W., Washington, D.C.

(D) If the hydrogen control system relies on post-accident inerting, the containment structure must be capable of withstanding the increased pressure:

(*1*) During the accident, where it is acceptable to show that it does not exceed Service Level C Limits or the Factored load Category (as described in paragraph (c)(3)(iv)(B) of this section; and

(*2*) Following inadvertent full inerting during normal plant operations, where it

is acceptable to show that it does not exceed either the Service Level A Limits of Subsubarticle NE-3220 (for a steel containment) or the Service Load Category of Subsubarticle CC-3720 (for a concrete containment.)

(3) Modest deviations from the criteria in paragraph (c)(3)(iv)(D) of this section will be considered by the Commission if good cause is shown.

(E) If the hydrogen control system relies on post-accident inerting, the systems and components required to establish and maintain safe shutdown and containment integrity must be designed and qualified for the environment caused by such inerting. Furthermore, inadvertent full inerting during normal plant operations must not adversely affect systems and components needed for safe operation of the plant.

(v) (A) Each licensee with a boiling light-water nuclear power reactor with a Mark III type of containment and each licensee with a pressurized light-water nuclear power reactor with an ice condenser type of containment issued a construction permit before March 28, 1979, for a reactor that does not rely upon an inerted atmosphere to control hydrogen inside the containment, shall provide its nuclear power reactor with systems and components necessary to establish and maintain safe shutdown and to maintain containment integrity. These systems and components must be capable of performing their functions during and after exposure to the environmental conditions created by the burning of hydrogen. Environmental conditions caused by local detonations of hydrogen must also be included, unless such detonations can be shown unlikely to occur.

(B) The amount of hydrogen to be considered is equivalent to that generated from a metal-water reaction involving 75% of the fuel cladding surrounding the active fuel region (excluding the cladding surrounding the plenum volume).

(vi) (A) Each applicant for or holder of an operating license for a boiling light-water nuclear power reactor with a Mark III type of containment or for a pressurized light-water nuclear power reactor with an ice condenser type of containment issued a construction permit before March 28, 1979, shall submit an analysis to the Director of the Office of Nuclear Reactor Regulation.

(B) The analysis required by paragraph (c)(3)(vi)(A) of this section must:

(1) Provide an evaluation of the consequences of large amounts of hydrogen generated after the start of an accident (hydrogen resulting from the metal-water reaction of up to and including 75% of the fuel cladding surrounding the active fuel region, excluding the cladding surrounding the plenum volume) and include consideration of hydrogen control measures as appropriate;

(2) Include the period of recovery from the degraded condition;

(3) Use accident scenarios that are accepted by the NRC staff. These scenarios must be accompanied by sufficient supporting justification to show that they describe the behavior of the reactor system during and following an accident resulting in a degraded core.

(4) Support the design of the hydrogen control system selected under paragraph (c)(3)(iv) of this section; and,

(5) Show that for those reactors described in paragraph (c)(3)(iv) of this section that do not rely upon an inerted atmosphere to control hydrogen inside the containment:

(i) The containment structural integrity as described in paragraph (c)(3)(iv) of this section will be maintained; and

(ii) Systems and components necessary to establish and maintain safe shutdown and to maintain containment integrity will be capable of performing their functions during and after exposure to the environmental conditions created by the burning of hydrogen, including the effect of local detonations, unless such detonations can be shown unlikely to occur.

(vii) (A) By June 25, 1985, each applicant for or holder of an operating license subject to the requirements of paragraphs (c)(3) (iv), (v) and (vi) of this section shall develop and submit to the Director of the Office of Nuclear Reactor Regulation a proposed schedule for meeting these requirements. The schedule may be developed using integrated scheduling systems previously approved for the facility by the NRC.

(B) For each applicant for an operating license as of February 25, 1985

the schedule shall provide for compliance with the requirements of paragraph (c)(3)(iv)(A) of this section prior to operation of the reactor in excess of 5 percent power. Completed final analyses are not necessary for a staff determination that a plant is safe to operate at full power provided that prior to such operation an applicant has provided a preliminary analysis which the staff has determined provides a satisfactory basis for a decision to support interim operation at full power until the final analysis has been completed. However, the record in this rulemaking shows that such preliminary analyses are not necessary for a staff determination that a plant is safe to operate at full power if the staff has determined for similar plants, referenced in this notice of rulemaking, that similar systems provide a satisfactory basis for a decision to support operation at full power until the preliminary analyses have been completed.

(C) For those holders of operating licenses containing license conditions on Hydrogen Control Measures covered by this section, the schedule shall be consistent with those license conditions, or approved amendments thereto.

(D) For those facilities not having an NRC approved integrated scheduling system, a final schedule for meeting the requirements of paragraphs (c)(3) (iv), (v) and (vi) of this section shall be established by the NRC staff within 90 days of receipt of a proposed schedule from the licensee or applicant, taking into account the current status of efforts at the facility to comply with the requirements; analyses that may be provided by applicants or licensees regarding the impacts of these requirements on other scheduled plant modifications, including any NRC-mandated safety modifications, and their relative importance to safety; and the Commission's objective that these requirements be complied with without undue delay.

(d)(1) For facilities that are in compliance with § 50.46(b), the amount of hydrogen contributed by core metal-water reaction (percentage of fuel cladding that reacts with water), as a result of degradation, but not total failure, of emergency core cooling functioning shall be assumed either to be five times the total amount of hydrogen calculated in demonstrating compliance with § 50.46(b)(3), or to be the amount that would result from reaction of all the metal in the outside surfaces of the cladding cylinders surrounding the fuel (excluding the cladding surrounding the plenum volume) to a depth of 0.00023 inch (0.0058 mm), whichever amount is greater. A time period of 2 minutes shall be used as the interval after the postulated LOCA over which the metal-water reaction occurs.

(2) For facilities as to which no evaluation of compliance in accordance with § 50.46(b) has been submitted and evaluated, the amounts of hydrogen so contributed shall be assumed to be that amount resulting from the reaction of 5 percent of the mass of metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume.

(e) For facilities whose notice of hearing on the application for a construction permit was published on or after November 5, 1970, purging and/or repressurization shall not be the primary means for controlling combustible gases following a LOCA. However, the capability for controlled purging shall be provided. For these facilities, the primary means for controlling combustible gases following a LOCA shall consist of a combustible gas con-

trol system, such as recombiners, that does not result in a singificant release from containment.

(f) For facilities with respect to which the notice of hearing on the application for a construction permit was published between December 22, 1968, and November 5, 1970, if the incremental radiation dose from purging (and repressurization if a repressurization system is provided) occurring at all points beyond the exclusion area boundary after a postulated LOCA calculated in accordance with § 100.11(a)(2) of this chapter is less than 2.5 rem to the whole body and less than 30 rem to the thyroid, and if the combined radiation dose at the low population zone outer boundary from purging and the postulated LOCA calculated in accordance with § 100.11(a)(2) of this chapter is less than 25 rem to the whole body and less than 300 rem to the thyroid, only a purging system is necessary, provided that the purging system and any filtration system associated with it are designed to conform with the general requirements of Criteria 41, 42, and 43 of Appendix A to this part. Otherwise the facility shall be provided with another type of combustible gas control system (a repressurization system is acceptable) designed to conform with the general requirements of Criteria 41, 42, and 43 of Appendix A to this part. If a purge system is used as part of the repressurization system, the purge system shall be designed to conform with the general requirements of Criteria 41, 42, and 43 of Appendix A to this part. The containment shall not be repressurized beyond 50 percent of the containment design pressure.

(g) For facilities with respect to which the notice of hearing on the application for a construction permit was published on or before December 22, 1968, if the combined radiation dose at the low population zone outer boundary from purging (and repressurization if a repressurization system is provided) and the postulated LOCA calculated in accordance with § 100.11(a)(2) of this chapter is less than 25 rem to the whole body and less than 300 rem to the thyroid, only a purging system is necessary, provided that the purging system and any filtration system associated with it are designed to conform with the general requirements of Criteria 41, 42, and 43 of Appendix A to this part. Otherwise, the facility shall be provided with another type of combustible gas control system (a repressurization system is acceptable) designed to conform with the general requirements of Criteria 41, 42, and 43 of Appendix A to this part. If a purge system is used as part of the repressurization system, it shall be designed to conform with the general requirements of Criteria 41, 42, and 43 of Appendix A to this part. The containment shall not be repressurized beyond 50 percent of the containment design pressure.

(h) As used in this section:

(1) Degradation, but not total failure, of emergency core cooling functioning means that the performance of the emergency core cooling system is postulated, for purposes of design of the combustible gas control system, not to meet the acceptance criteria in § 50.46 and that there could be localized clad melting and metal-water reaction to the extent postulated in paragraph (d) of this section. The degree of performance degradation is not postulated to be sufficient to cause core meltdown.

(2) A combustible gas control system is a system that operates after a LOCA to maintain the concentrations of combustible gases within the containment, such as hydrogen, below flammability limits. Combustible gas control systems are of two types: (i) Systems that allow controlled release from containment, through filters if necessary, such as purging systems and repressurization systems, and (ii) systems that do not result in a significant release from containment such as recombiners.

(3) A purging system is a system for the controlled release of the containment atmosphere to the environment through filters if needed.

(4) A repressurization system is a system used to dilute the concentration of combustible gas within containment by adding inert gas or air to the containment. Dilution of the combustible gas results in a delay in time until a flammable concentration is reached and permits fission product decay. Operation is limited to a containment repressurization to 50 percent of the containment design pressure. A purging system is normally part of the repressurization system.

§ 50.45 Standards for construction permits.

An applicant for a license or an amendment of a license who proposes to construct or alter a production or utilization facility will be initially granted a construction permit, if the application is in conformity with and acceptable under the criteria of §§ 50.31 through 50.38 and the standards of §§ 50.40 through 50.43.

§ 50.46 Acceptance criteria for emergency core cooling systems for light water nuclear power reactors.

(a)(1) Except as provided in paragraph (a)(2) and (3) of this section, each boiling and pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical Zircaloy cladding shall be provided with an emergency core cooling system (ECCS) which shall be designed such that its calculated cooling performance following postulated loss-of-coolant accidents conforms to the criteria set forth in paragraph (b) of this section. ECCS cooling performance shall be calculated in accordance with an acceptable evaluation model, and shall be calculated for a number of postulated loss-of-coolant accidents of different sizes, locations, and other properties sufficient to provide assurance that the entire spectrum of postulated loss-of-coolant accidents is covered. Appendix K, ECCS Evaluation Models, sets forth certain required and acceptable features of evaluation models. Conformance with the criteria set forth in paragraph (b) of this section with ECCS cooling performance calculated in accordance with an acceptable evaluation model, may require that restrictions be imposed on reactor operation.

(2) With respect to reactors for which operating licenses have previously been issued and for which operating licenses may issue on or before December 28, 1974:

(i) The time within which actions required or permitted under this paragraph (a)(2) must occur shall begin to run on February 4, 1974.

(ii) Within six months following the date specified in paragraph (a)(2)(i) of this section an evaluation in accordance with paragraph (a)(1) of this section shall have been submitted to the Director of Regulation of the Atomic Energy Commission. The evaluation shall have been accompanied by such proposed changes in technical specifications or license amendments as may be necessary to bring reactor operation in conformity with paragraph (a)(1) of this section.

(iii) Any licensee may have requested an extension of the six-month period referred to in paragraph (a)(2)(ii) of this section for good cause. Any such request shall have been submitted not less than 45 days prior to expiration of the six-month period, and shall have been accompanied by affidavits showing precisely why the evaluation is not complete and the minimum time believed necessary to complete it. The Director of Regulation of the Atomic Energy Commission shall have caused notice of such a request to be published promptly in the FEDERAL REGISTER; such notice shall have provided for the submission of comments by interested persons within a time period established by the Director of Regulation. If, upon reviewing the foregoing submissions, the Director of Regulation concluded that good cause had been shown for an extension, he may have extended the six-month period for the shortest additional time which in his judgment will be necessary to enable the licensee to furnish the submissions required by paragraph (a)(2)(ii) of this section. Requests for extensions of the six-month period submitted under this subparagraph will have been ruled upon by the Director of Regulation prior to expiration of that period.

(iv) Upon submission of the evalua-

43 FR 50162
43 FR 50162
39 FR 1001
39 FR 27121
40 FR 8774
24 FR 355
39 FR 1001

tion required by paragraph (a)(2)(ii) of this section (or under paragraph (a)(2)(iii), if the six-month period is extended) the facility shall continue or commence operation only within the limits of both the proposed technical specifications or license amendments submitted in accordance with this paragraph (a)(2) and all technical specifications or license conditions previously imposed by the Atomic Energy Commission, including the requirements of the Interim Policy Statement (June 29, 1971, 36 FR 12248) as amended December 18, 1971, 36 FR 24082).

(v) Further restrictions on reactor operation will be imposed if it is found that the evaluations submitted under paragraphs (a)(2) (ii) and (iii) of this section are not consistent with paragraph (a)(1) of this section and as a result such restrictions are required to protect the public health and safety.

(vi) Exemptions from the operating requirements of paragraph (a)(2)(iv) of this section may be granted for good cause. Requests for such exemption shall be submitted not less than 45 days prior to the date upon which the plant would otherwise be required to operate in accordance with the procedures of said paragraph (a)(2)(iv) of this section. Any such request shall be filed with the Secretary of the Commission, who shall cause notice of its receipt to be published promptly in the FEDERAL REGISTER; such notice shall provide for the submission of comments by interested persons within 14 days following FEDERAL REGISTER publication. The Director of Nuclear Reactor Regulation shall submit his views as to any requested exemption within five days following expiration of the comment period.

(vii) Any request for an exemption submitted under paragraph (a)(2)(vi) of this section must show, with appropriate affidavits and technical submissions, that it would be in the public interest to allow the licensee a specified additional period of time within which to alter the operation of the facility in the manner required by paragraph (a)(2)(iv) of this section. The request shall also include a discussion of the alternatives available for establishing compliance with the rule.

(3) Construction permits may have been issued after December 28, 1973 but before December 28, 1974 subject to any applicable conditions or restrictions imposed pursuant to other regulations in this chapter and the Interim Acceptance Criteria for Emergency Core Cooling Systems published on June 29, 1971 (36 FR 12248) as amended (December 18, 1971, 36 FR 24082): Provided, however, that no operating license shall be issued for facilities constructed in accordance with construction permits issued pursuant to this paragraph, unless the Commission determines, among other things that the proposed facility meets the requirements of paragraph (a)(1) of this section.

(b)(1) *Peak cladding temperature.* The calculated maximum fuel element cladding temperature shall not exceed 2200° F.

(2) *Maximum cladding oxidation.* The calculated total oxidation of the cladding shall nowhere exceed 0.17 times the total cladding thickness before oxidation. As used in this subparagraph total oxidation means the total thickness of cladding metal that would be locally converted to oxide if all the oxygen absorbed by and reacted with the cladding locally were converted to stoichiometric zirconium dioxide. If cladding rupture is calculated to occur, the inside surfaces of the cladding shall be included in the oxidation, beginning at the calculated time of rupture. Cladding thickness before oxidation means the radial distance from inside to outside the cladding, after any calculated rupture or swelling has occurred but before significant oxidation. Where the calculated conditions of transient pressure and temperature lead to a prediction of cladding swelling, with or without cladding rupture, the unoxidized cladding thickness shall be defined as the cladding cross-sectional area, taken at a horizontal plane at the elevation of the rupture, if it occurs, or at the elevation of the highest cladding temperature if no rupture is calculated to occur, divided by the average circumference at that elevation. For ruptured cladding the circumference does not include the rupture opening.

(3) *Maximum hydrogen generation.* The calculated total amount of hydrogen generated from the chemical reaction of the cladding with water or steam shall not exceed 0.01 times the hypothetical amount that would be generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react.

(4) *Coolable geometry.* Calculated changes in core geometry shall be such that the core remains amenable to cooling.

(5) *Long-term cooling.* After any calculated successful initial operation of the ECCS, the calculated core temperature shall be maintained at an acceptably low value and decay heat shall be removed for the extended period of time required by the long-lived radioactivity remaining in the core.

(c) As used in this section:

(1) Loss-of-coolant accidents (LOCA's) are hypothetical accidents that would result from the loss of reactor coolant, at a rate in excess of the capability of the reactor coolant makeup system, from breaks in pipes in the reactor coolant pressure boundary up to and including a break equivalent in size to the double-ended rupture of the largest pipe in the reactor coolant system.

(2) An evaluation model is the calculational framework for evaluating the behavior of the reactor system during a postulated loss-of-coolant accident (LOCA). It includes one or more computer programs and all other information necessary for application of the calculational framework to a specific LOCA, such as mathematical models used, assumptions included in the programs, procedure for treating the program input and output information, specification of those portions of analysis not included in computer programs, values of parameters, and all other information necessary to specify the calculational procedure.

(d) The requirements of this section are in addition to any other requirements applicable to ECCS set forth in this part. The criteria set forth in paragraph (b), with cooling performance calculated in accordance with an acceptable evaluation model, are in implementation of the general requirements with respect to ECCS cooling performance design set forth in this part, including in particular Criterion 35 of Appendix A.

§ 50.47 Emergency plans.

(a)(1) Except as provided in paragraph (d) of this section, no operating license for a nuclear power reactor will be issued unless a finding is made by NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

(2) The NRC will base its finding on a review of the Federal Emergency Management Agency [FEMA] findings and determinations as to whether State and local emergency plans are adequate and whether there is reasonable assurance that they can be implemented, and on the NRC assessment as to whether the applicant's onsite emergency plans are adequate and whether there is reasonable assurance that they can be implemented. A FEMA finding will primarily be based on a review of the plans. Any other information already available to FEMA may be considered in assessing whether there is reasonable assurance that the

[50 FR 19323]

plans can be implemented. In any NRC licensing proceeding, a FEMA finding will constitute a rebuttable presumption on questions of adequacy and implementation capability.

[47 FR 40536]

(b) The onsite and, except as provided in paragraph (d) of this section, offsite emergency response plans for nuclear power reactors must meet the following standards:

[45 FR 55402]

(1) Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

(2) On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified.

(3) Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.

(4) A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

(5) Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and followup messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.

(6) Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

(7) Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.

(8) Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

(9) Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

[45 FR 55402]

(10) A range of protective actions have been developed for the plume exposure pathway EPZ for emergency workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

(11) Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

(12) Arrangments are made for medical services for contaminated injured individuals.

(13) General plans for recovery and reentry are developed.

(14) Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

(15) Radiological emergency response training is provided to those who may be called on to assist in an emergency.

(16) Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

[47 FR 30232]

(c)(1) Failure to meet the applicable standards set forth in paragraph (b) of this section may result in the Commission declining to issue an operating license; however, the applicant will have an opportunity to demonstrate to the satisfaction of the Commission that deficiencies in the plans are not significant for the plant in question, that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons to permit plant operation.

[45 FR 55402]

(2) Generally, the plume exposure pathway EPZ for nuclear power plants shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius. The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The size of the EPZs also may be determined on a case-by-case basis for gas-cooled nuclear reactors and for reactors with an authorized power level less than 250 MW thermal. The plans for the ingestion pathway shall focus on such actions as are appropriate to protect the food ingestion pathway.

[47 FR 30232]

(d) Notwithstanding the requirements of paragraphs (a) and (b) of this section, no NRC or FEMA review, findings, or determinations concerning the state of offsite emergency preparedness or the adequacy of and capability to implement State and local offsite emergency plans are required prior to issuance of an operating license authorizing only fuel loading and/or low power operations (up to 5% of the rated power). Insofar as emergency planning and preparedness requirements are concerned, a license authorizing fuel loading and/or low power operation may be issued after a finding is made by the NRC that the state of onsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. The NRC will base this finding on its assessment of the applicant's emergency plans against the pertinent standards in paragraph (b) of this section and Appendix E of this Part.

Footnote 1 [removed]
49 FR 27733

§ 50.48 Fire protection.

(a) Each operating nuclear power plant shall have a fire protection plan that satisfies Criterion 3 of Appendix A to this part. This fire protection plan shall describe the overall fire protection program for the facility, identify the various positions within the licensee's organization that are responsibile for the program, state the authorities that are delegated to each of these positions to implement those responsibilities, and outline the plans for fire protection, fire detection and suppression capability, and limitation of fire damage. The plan shall also describe specific features necessary to implement the program described above, such as administrative controls and personnel requirements for fire prevention and manual fire suppression activities, automatic and manually operated fire detection and suppression systems, and the means to limit fire damage to structures, systems, or components important to safety so that the capability to safely shut down the plant is ensured.[3]

45 FR 76602

(b) Appendix R to this part establishes fire protection features required to satisfy Criterion 3 of Appendix A to this part with respect to certain generic issues for nuclear power plants licensed to operate prior to January 1, 1979. Except for the requirements of Sections III.G, III.J, and III.O, the provisions of Appendix R to this part shall not be applicable to nuclear power plants licensed to operate prior to January 1, 1979, to the extent that fire protection features proposed or implemented by the licensee have been accepted by the NRC staff as satisfying the provisions of Appendix A to Branch Technical Position BTP APCSB 9.5-1[4] reflected in staff fire protection safety evaluation reports issued prior to the effective date of this rule, or to the extent that fire protection features were accepted by the staff in comprehensive fire protection safety evaluation reports issued before Appendix A to Branch Technical Position BTP APCSB 9.5-1 was published in August 1976. With respect to all other fire protection features covered by Appendix R, all nuclear power plants licensed to operate prior to January 1, 1979 shall satisfy the applicable requirements of Appendix R to this part, including specifically the requirements of Sections III.G, III.J, and III.O.

(c) All fire protection modifications required to satisfy the provisions of Appendix R to this part or directly affected by such requirements shall be completed on the following schedule:

(1) Those fire protection features that involve revisions of administrative controls, manpower changes, and training, shall be implemented within 30 days after the effective date of this section and Appendix R to this part.

45 FR 76602

(2) Those fire protection features that involve installation of modifications that do not require prior NRC approval or plant shutdown shall be implemented within 9 months after the effective date of this section and Appendix R to this part.

(3) Those fire protection features, except for those requiring prior NRC approval by paragraph (c)(5) of this section, that involve installation of modifications that do require plant shutdown, the need for which is justified in the plans and schedules required by the provisions of paragraph (c)(5) of this section, shall be implemented before startup after the earliest of the following events commencing 180 days or more after the effective date of this section and Appendix R to this part:

(i) the first refueling outage;

(ii) another planned outage that lasts for at least 60 days; or

(iii) an unplanned outage that lasts for at least 120 days.

(4) Those fire protection features that require prior NRC approval by paragraph (c)(5) of this section, shall be implemented within the following schedule: Dedicated shutdown systems—30 months after NRC approval; modifications requiring plant shutdown—before startup after the earliest of the events given in paragraph (c)(3) commencing 180 days after NRC approval; modifications not requiring plant shutdown—6 months after NRC approval.

(5) Licensees shall make any modifications necessary to comply with these requirements in accordance with the above schedule without prior review and approval by NRC except for modifications required by Section III.G.3 of Appendix R to this part. Licensees shall submit plans and schedules for meeting the provisions of paragraphs (c)(2), (c)(3), and (c)(4) within 30 days after the effective date of this section and Appendix R to this part. Licensees shall submit design descriptions of modifications needed to satisfy Section III.G.3 of Appendix R to this part within 30 days after the the effective date of this section and Appendix R to this part.

(6) In the event that a request for exemption from a requirement to comply with one or more of the provisions of Appendix R filed within 30 days of the effective date of this rule is based on an assertion by the licensee that such required modifications would not enhance fire protection safety in the facility or that such modifications may be detrimental to overall facility safety, the schedule requirements of paragraph (c) shall be tolled until final Commission action on the exemption request upon a determination by the Director of Nuclear Reactor Regulation that the licensee has provided a sound technical basis for such assertion that warrants further staff review of the request.

(d) Fire protection features accepted by the NRC staff in Fire Protection Safety Evaluation Reports referred to in paragraph (b) of this section and supplements to such reports, other than features covered by paragraph (c), shall be completed as soon as practicable but no later than the completion date currently specified in license conditions or technical specifications for such facility, or the date determined by paragraphs (d)(1) through (d)(4) of this section, whichever is sooner, unless the Director of Nuclear Reactor Regulation determines, upon a showing by the licensee, that there is good cause for extending such date and that the public health and safety is not adversely affected by such extension. Extensions of such date shall not exceed the dates determined by paragraphs (c)(1) through (c)(4) of this section.

45 FR 76602

(1) Those fire protection features that involve revisions of administrative controls, manpower changes, and training shall be implemented within 4 months after the date of the NRC staff Fire Protection Evaluation Report accepting or requiring such features.

(2) Those fire protection features involving installation of modifications not requiring prior approval or plant shutdown shall be implemented within 12 months after the date of the NRC staff Fire Protection Safety Evaluation Report accepting or requiring such features.

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[3] Basic fire protection guidance for nuclear power plants is contained in two NRC documents:

• Branch Technical Position Auxiliary Power Conversion System Branch BTP APCSB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," for new plants docketed after July 1, 1976, dated May 1976.

• Appendix A to BTP APCSB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976," for plants that were operating or under various stages of design or construction before July 1, 1976, dated August 23, 1976.

[4] Clarification and guidance with respect to permissible alternatives to satisfy Appendix A to BTP APCSB 9.5-1 has been provided in four other NRC documents.

• "Supplementary Guidance on Information Needed for Fire Protection Evaluation," dated October 21, 1976.

• "Sample Technical Specification," dated May 12, 1977.

• "Nuclear Plant Fire Protection Functional Responsibilities, Administrative Control and Quality Assurance," dated June 14, 1977.

• "Manpower Requirements for Operating Reactors," dated May 11, 1978.

A Fire Protection Safety Evaluation Report that has been issued for each operating plant states how these guidelines were applied to each facility and identifies open fire protection issues that will be resolved when the facility satisfies the appropriate requirements of Appendix R to this part.

(3) Those fire protection features, including alternative shutdown capability, involving installation of modifications requiring plant shutdown shall be implemented before the startup after the earliest of the following events commencing 9 months or more after the date of the NRC staff Fire Protection Safety Evaluation Report accepting or requiring such features:

(i) The first refueling outage;

(ii) Another planned outage that lasts for at least 60 days; or

(iii) An unplanned outage that lasts for at least 120 days.

(4) Those fire protection features involving dedicated shutdown capability requiring new buildings and systems shall be implemented within 30 months of NRC approval. Other modifications requiring NRC approval prior to installation shall be implemented within 6 months after NRC approval.

(e) Nuclear power plants licensed to operate after January 1, 1979, shall complete all fire protection modifications needed to satisfy Criterion 3 of Appendix A to this part in accordance with the provisions of their licenses.

45 FR 76602

§ 50.49 Environmental qualification of electric equipment important to safety for nuclear power plants.

(a) Each holder of or each applicant for a license to operate a nuclear power plant shall establish a program for qualifying the electric equipment defined in paragraph (b) of this section.

(b) Electric equipment important to safety covered by this section is:

(1) Safety-related electric equipment:[3] This equipment is that relied upon to remain functional during and following design basis events to ensure (i) the integrity of the reactor coolant pressure boundary, (ii) the capability to shut down the reactor and maintain it in a safe shutdown condition, and (iii) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the 10 CFR Part 100 guidelines. Design basis events are defined as conditions of normal operation, including anticipated operational occurrences, design basis accidents, external events, and natural phenomena for which the plant must be designed to ensure functions (i) through (iii) of this paragraph.

(2) Nonsafety-related electric equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions specified in subparagraphs (i) through (iii) of paragraph (b)(1) of this section by the safety-related equipment.

(3) Certain post-accident monitoring equipment.[4]

(c) Requirements for (1) dynamic and seismic qualification of electric equipment important to safety, (2) protection of electric equipment important to safety against other natural phenomena and external events, and (3) environmental qualification of electric equipment important to safety located in a mild environment are not included within the scope of this section. A mild environment is an environment that would at no time be significantly more severe than the environment that would occur during normal plant operation, including anticipated operational occurrences.

48 FR 2729

(d) The applicant or licensee shall prepare a list of electric equipment important to safety covered by this section. In addition, the applicant or licensee shall include the following information for this electric equipment important to safety in a qualification file:

(1) The performance specifications under conditions existing during and following design basis accidents.

(2) The voltage, frequency, load, and other electrical characteristics for which the performance specified in accordance with paragraph (d)(1) of this section can be ensured.

(3) The environmental conditions, including temperature, pressure, humidity, radiation, chemicals, and submergence at the location where the equipment must perform as specified in accordance with paragraphs (d)(1) and (2) of this section.

(e) The electric equipment qualification program must include and be based on the following:

(1) *Temperature and Pressure.* The time-dependent temperature and pressure at the location of the electric equipment important to safety must be established for the most severe design basis accident during or following which this equipment is required to remain functional.

(2) *Humidity.* Humidity during design basis accidents must be considered.

(3) *Chemical Effects.* The composition of chemicals used must be at least as severe as that resulting from the most limiting mode of plant operation (e.g., containment spray, emergency core cooling, or recirculation from containment sump). If the composition of the chemical spray can be affected by equipment malfunctions, the most severe chemical spray environment that results from a single failure in the spray system must be assumed.

(4) *Radiation.* The radiation environment must be based on the type of radiation, the total dose expected during normal operation over the installed life of the equipment, and the radiation environment associated with the most severe design basis accident during or following which the equipment is required to remain functional, including the radiation resulting from recirculating fluids for equipment located near the recirculating lines and including dose-rate effects.

(5) *Aging.* Equipment qualified by test must be preconditioned by natural or artificial (accelerated) aging to its end-of-installed life condition. Consideration must be given to all significant types of degradation which can have an effect on the functional capability of the equipment. If preconditioning to an end-of-installed life condition is not practicable, the equipment may be preconditioned to a shorter designated life. The equipment must be replaced or refurbished at the end of this designated life unless ongoing qualification demonstrates that the item has additional life.

(6) *Submergence* (if subject to being submerged).

(7) *Synergistic Effects.* Synergistic effects must be considered when these effects are believed to have a significant effect on equipment performance.

(8) *Margins.* Margins must be applied to account for unquantified uncertainty, such as the effects of production variations and inaccuracies in test instruments. These margins are in addition to any conservatisms applied during the derivation of local environmental conditions of the equipment unless these conservatisms can be quantified and shown to contain appropriate margins.

48 FR 2729

(f) Each item of electric equipment important to safety must be qualified by one of the following methods:

(1) Testing an identical item of equipment under identical conditions or under similar conditions with a supporting analysis to show that the equipment to be qualified is acceptable.

(2) Testing a similar item of equipment with a supporting analysis to show that the equipment to be qualified is acceptable.

(3) Experience with identical or similar equipment under similar conditions with a supporting analysis to show that the equipment to be qualified is acceptable.

[3] Safety-related electric equipment is referred to as "Class 1E" equipment in IEEE 323-1974. Copies of this standard may be obtained from the Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, NY 10017.

[4] Specific guidance concerning the types of variables to be monitored is provided in Revision 2 of Regulatory Guide 1.97, "Instrumentation for Light-Water Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident." Copies of the Regulatory Guide can be obtained from Nuclear Regulatory Commission, Document Management Branch, Washington, DC 20555.

(4) Analysis in combination with partial type test data that supports the analytical assumptions and conclusions.

(g) Each holder of an operating license issued prior to February 22, 1983, shall, by May 20, 1983, identify the electric equipment important to safety within the scope of this section already qualified and submit a schedule for either the qualification to the provisions of this section or for the replacement of the remaining electric equipment important to safety within the scope of this section. This schedule must establish a goal of final environmental qualification of the electric equipment within the scope of this section by the end of the second refueling outage after March 31, 1982 or by March 31, 1985, whichever is earlier. The Director of the Office of Nuclear Reactor Regulation may grant requests for extensions of this deadline to a date no later than November 30, 1985, for specific pieces of equipment if these requests are filed on a timely basis and demonstrate good cause for the extension, such as procurement lead time, test complications, and installation problems. In exceptional cases, the Commission itself may consider and grant extensions beyond November 30, 1985, for completion of environmental qualification.

The schedule in this paragraph supersedes the June 30, 1982, deadline, or any other previously imposed date, for environmental qualification of electric equipment contained in certain nuclear power operating licenses.

(h) Each licensee shall notify the Commission of any significant equipment qualification problem that may require extension of the completion date provided in accordance with paragraph (g) of this section within 60 days of its discovery.

(i) Applicants for operating licenses that are to be granted on or after February 22, 1983, but prior to November 30, 1985, shall perform an analysis to ensure that the plant can be safely operated pending completion of equipment qualification required by this section. This analysis must be submitted to the Director of the Office of Nuclear Reactor Regulation for consideration prior to the granting of an operating license and must include, where appropriate, consideration of:

(1) Accomplishing the safety function by some designated alternative equipment if the principal equipment has not been demonstrated to be fully qualified.

(2) The validity of partial test data in support of the original qualification.

(3) Limited use of administrative controls over equipment that has not been demonstrated to be fully qualified.

(4) Completion of the safety function prior to exposure to the accident environment resulting from a design basis event and ensuring that the subsequent failure of the equipment does not degrade any safety function or mislead the operator.

(5) No significant degradation of any safety function or misleading information to the operator as a result of failure of equipment under the accident environment resulting from a design basis event.

(j) A record of the qualification, including documentation in paragraph (d) of this section, must be maintained in an auditable form for the entire period during which the covered item is installed in the nuclear power plant or is stored for future use to permit verification that each item of electric equipment important to safety covered by this section—

(1) Is qualified for its application; and

(2) Meets its specified performance requirements when it is subjected to the conditions predicted to be present when it must perform its safety function up to the end of its qualified life.

(k) Applicants for and holders of operating licenses are not required to requalify electric equipment important to safety in accordance with the provisions of this section if the Commission has previously required qualification of that equipment in accordance with "Guidelines for Evaluating Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors," November 1979 (DOR Guidelines), or NUREG–0588 (For Comment version), "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment."

(l) Replacement equipment must be qualified in accordance with the provisions of this section unless there are sound reasons to the contrary.

Issuance, Limitations, and Conditions of Licenses and Construction Permits

§ 50.50 Issuance of licenses and construction permits.

Upon determination that an application for a license meets the standards and requirements of the act and regulations, and that notifications, if any, to other agencies or bodies have been duly made, the Commission will issue a license, or if appropriate a construction permit, in such form and containing such conditions and limitations including technical specifications, as it deems appropriate and necessary.

§ 50.51 Duration of license, renewal.

Each license will be issued for a fixed period of time to be specified in the license but in no case to exceed 40 years from the date of issuance. Where the operation of a facility is involved the Commission will issue the license for the term requested by the applicant or for the estimated useful life of the facility if the Commission determines that the estimated useful life is less than the term requested. Where construction of a facility is involved, the Commission may specify in the construction permit the period for which the license will be issued if approved pursuant to § 50.56. Licenses may be renewed by the Commission upon the expiration of the period.

§ 50.52 Combining licenses.

The Commission may combine in a single license the activities of an applicant which would otherwise be licensed severally.

§ 50.53 Jurisdictional limitations.

No license under this part shall be deemed to have been issued for activities which are not under or within the jurisdiction of the United States.

§ 50.54 Conditions of licenses.

Whether stated therein or not, the following shall be deemed conditions in every license issued:

(a)(1) Each nuclear power plant or fuel reprocessing plant licensee subject to the quality assurance criteria in Appendix B of this part shall implement, pursuant to § 50.34(b)(6)(ii) of this part, the quality assurance program described or referenced in the Safety Analysis Report, including changes to that report.

(2) Each licensee described in paragraph (a)(1) of this section shall, by June 10, 1983, submit to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter the current description of the quality assurance program it is implementing for inclusion in the Safety Analysis Report, unless there are no changes to the description previously accepted by NRC. This submittal must identify changes made to the quality assurance program description since the description was submitted to NRC. (Should a licensee need additional time beyond June 10, 1983 to submit its current quality assurance program description to NRC, it shall notify the appropriate NRC Regional Office in writing, explain why additional time is needed, and provide a schedule for NRC approval showing when its current quality assurance program description will be submitted.)

(3) After March 11, 1983, each licensee described in paragraph (a)(1) of this section may make a change to a previously accepted quality assurance program description included or referenced in the Safety Analysis

Report, provided the change does not reduce the commitments in the program description previously accepted by the NRC. Changes to the quality assurance program description that do not reduce the commitments must be submitted to the NRC at least annually in accordance with the requirements of § 50.71 of this part. Changes to the quality assurance program description that do reduce the commitments must be submitted to NRC and receive NRC approval before implementation, as follows:

(i) Changes made to the Safety Analysis Report must be submitted for review to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter; to the Resident Inspector; and to the Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Changes made to NRC-accepted quality assurance topical report descriptions must be submitted to the Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, and to the NRC Region IV Vendor Program Branch.

(ii) The submittal of a change to the Safety Analysis Report quality assurance program description must include all pages affected by that change and must be accompanied by a forwarding letter identifying the change, the reason for the change, and the basis for concluding that the revised program incorporating the change continues to satisfy the criteria of Appendix B of this part and the Safety Analysis Report quality assurance program description commitments previously accepted by the NRC (the letter need not provide the basis for changes that correct spelling, punctuation, or editorial items).

(iii) A copy of the forwarding letter identifying the changes must be maintained as a facility record for three years.

(iv) Changes to the quality assurance program description included or referenced in the Safety Analysis Report shall be regarded as accepted by the Commission upon receipt of a letter to this effect from the appropriate reviewing office of the Commission or 60 days after submittal to the Commission, whichever occurs first.

48 FR 1026

(b) No right to the special nuclear material shall be conferred by the license except as may be defined by the license.

21 FR 355

(c) Neither the license, nor any right thereunder, nor any right to utilize or produce special nuclear material shall be transferred, assigned, or disposed of in any manner, either voluntarily or involuntarily, directly or indirectly, through transfer of control of the license to any person, unless the Commission shall, after securing full information, find that the transfer is in accordance with the provisions of the act and give its consent in writing.

(d) The license shall be subject to suspension and to the rights of recapture of the material or control of the facility reserved to the Commission under section 108 of the act in a state of war or national emergency declared by Congress.

(e) The license shall be subject to revocation, suspension, modification, or amendment for cause as provided in the act and regulations, in accordance with the procedures provided by the act and regulations.

(f) The licensee will at any time before expiration of the license, upon request of the Commission submit written statements, signed under oath or affirmation, to enable the Commission to determine whether or not the license should be modified, suspended or revoked.

(g) The issuance or existence of the license shall not be deemed to waive, or relieve the licensee from compliance with, the antitrust laws, as specified in subsection 105a of the Act. In the event that the licensee should be found by a court of competent jurisdiction to have violated any provision of such antitrust laws in the conduct of the licensed activity, the Commission may suspend or revoke the license or take such other action with respect to it as shall be deemed necessary.

(h) The license shall be subject to the provisions of the Act now or hereafter in effect and to all rules, regulations, and orders of the Commission. The terms and conditions of the license shall be subject to amendment, revision, or modification, by reason of amendments of the Act or by reason of rules, regulations, and orders issued in accordance with the terms of the act.

21 FR 355

(i) Except as provided in § 55.9 of this chapter, the licensee shall not permit the manipulation of the controls of any facility by anyone who is not a licensed operator or senior operator as provided in Part 55 of this chapter.

28 FR 3196

(i-1) Within three (3) months after issuance of an operating license, the licensee shall have in effect an operator requalification program which shall, as a minimum, meet the requirements of Appendix A of Part 55 of this chapter. Notwithstanding the provisions of § 50.59 the licensee shall not, except as specifically authorized by the Commission, make a change in an approved operator requalification program by which the scope, time allotted for the program or frequency in conducting different parts of the program is decreased.

38 FR 26354

Holders of operating licenses in effect on September 17, 1973 shall implement an operator requalification program which, as a minimum, meets the requirements of Appendix A of Part 55 of this chapter which was submitted for approval by the Atomic Energy Commission.

40 FR 8774

(j) Apparatus and mechanisms other than controls, the operation of which may affect the reactivity or power level of a reactor shall be manipulated only with the knowledge and consent of an operator or senior operator licensed pursuant to Part 55 of this chapter present at the controls.

(k) An operator or senior operator licensed pursuant to Part 55 of this chapter shall be present at the controls at all times during the operation of the facility.

(l) The licensee shall designate individuals to be responsible for directing the licensed activities of licensed operators. These individuals shall be licensed as senior operators pursuant to Part 55 of this chapter.

28 FR 3196

(m)(1)A senior operator licensed pursuant to Part 55 of this chapter shall be present at the facility or readily available on call at all times during its operation, and shall be present at the facility during initial start-up and approach to power, recovery from an unplanned or unscheduled shut-down or significant reduction in power, and refueling, or as otherwise prescribed in the facility license.

48 FR 31611

(2) Notwithstanding any other provisions of this section, by January 1, 1984, licensees of nuclear power units shall meet the following requirements:

(i) Each licensee shall meet the minimum licensed operator staffing requirements in the following table:

PART 50 ● DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

MINIMUM REQUIREMENTS [1] PER SHIFT FOR ON-SITE STAFFING OF NUCLEAR POWER UNITS BY OPERATORS AND SENIOR OPERATORS LICENSED UNDER 10 CFR PART 55

Number of nuclear power units operating [2]	Position	One unit	Two units		Three units	
		One control room	One control room	Two control rooms	Two control rooms	Three control rooms
None	Senior Operator	1	1	1	1	1
	Operator	1	2	2	3	3
One	Senior Operator	2	2	2	2	2
	Operator	2	3	3	4	4
Two	Senior Operator		2	3	[3] 3	3
	Operator		3	4	[3] 5	5
Three	Senior Operator				3	4
	Operator				5	6

[1] Temporary deviations from the numbers required by this table shall be in accordance with criteria established in the unit's technical specifications.
[2] For the purpose of this table, a nuclear power unit is considered to be operating when it is in a mode other than cold shutdown or refueling as defined by the unit's technical specifications.
[3] The number of required licensed personnel when the operating nuclear power units are controlled from a common control room are two senior operators and four operators.

(ii) Each licensee shall have at its site a person holding a senior operator license for all fueled units at the site who is assigned responsibility for overall plant operation at all times there is fuel in any unit. If a single senior operator does not hold a senior operator license on all fueled units at the site, then the licensee must have at the site two or more senior operators, who in combination are licensed as senior operators on all fueled units.

(iii) When a nuclear power unit is in an operational mode other than cold shutdown or refueling, as defined by the unit's technical specifications, each licensee shall have a person holding a senior operator license for the nuclear power unit in the control room at all times. In addition to this senior operator, for each fueled nuclear power unit, a licensed operator or senior operator shall be present at the controls at all times.

(iv) Each licensee shall have present, during alteration of the core of a nuclear power unit (including fuel loading or transfer), a person holding a senior operator license or a senior operator license limited to fuel handling to directly supervise the activity and, during this time, the licensee shall not assign other duties to this person.

(3) Licensees who cannot meet the January 1, 1984 deadline must submit by October 1, 1983 a request for an extension to the Director of the Office of Nuclear Regulation and demonstrate good cause for the request.

48 FR 31611

(n) The licensee shall not, except as authorized pursuant to a construction permit, make any alteration in the facility constituting a change from the technical specifications previously incorporated in a license or construction permit pursuant to § 50.36 of this part.

31 FR 3668

(o) Primary reactor containments for water cooled power reactors shall be subject to the requirements set forth in Appendix J to this part.

38 FR 4385

(p) The licensee shall prepare and maintain safeguards contingency plan procedures in accordance with Appendix C of 10 CFR Part 73 for effecting the actions and decisions contained in the Responsibility Matrix of the safeguards contingency plan. The licensee may make no change which would decrease the effectiveness of a security plan prepared pursuant to § 50.34(c) or Part 73 of this chapter, or of the first four categories of information (Background, Generic Planning Base, Licensee Planning Base, Responsibility Matrix) contained in a licensee safeguards contingency plan prepared pursuant to § 50.34(d) or Part 73, as applicable, without prior approval of the Commission. A licensee desiring to make such a change shall submit an application for an amendment to his license pursuant to § 50.90. The licensee may make changes to the security plan or to the safeguards contingency plan without prior Commission approval if the changes do not decrease the safeguards effectiveness of the plan. The licensee shall maintain records of changes to the plans made without prior Commission approval for a period of two years from the date of the change, and shall furnish to the Director of Nuclear Material Safety and Safeguards (f or enrichment and reprocessing facilities) or to the Director of Nuclear Reactor Regulation (for nuclear reactors), U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, with a copy to the appropriate NRC Regional Office specified in Appendix A of Part 73 of this chapter, a report containing a description of each change within two months after the change is made. Commencing on February 9, 1983, licensees in Regions I and II, and commencing on October 1, 1983 licensees in all regions shall furnish the report required by this paragraph to the Regional Administrator of the appropriate NRC Regional Office specified in Appendix A of Part 73 of this chapter, with a copy to the Director of Nuclear Material Safety and Safeguards (for enrichment and reprocessing facilities) or to the Director of Nuclear Reactor Regulation (for nuclear reactors). Prior to the safeguards contingency plan being put into effect, the licensee shall have:

(1) All safeguards capabilities specified in the safeguards contingency plan available and functional,

(2) Detailed procedures developed according to Appendix C to Part 73 available at the licensee's site, and

(3) All appropriate personnel trained to respond to safeguards incidents as outlined in the plan and specified in the detailed procedures.

48 FR 5886

48 FR 5886

The licensee shall provide for the development, revision, implementation, and maintenance of his safeguards contingency plan. To this end, the licensee shall provide for a review at least every 12 months of the safeguards contingency plan by individuals independent of both security program management and personnel who have direct responsibility for implementation of the security program. The review shall include a review and audit of safeguards contingency procedures and practices, an audit of the security system testing and maintenance program, and a test of the safeguards system along with commitments established for responses by local law enforcement authorities. The results of the review and audit, along with recommendations for improvements, shall be documented, reported to the licensee's corporate and plant management, and kept available at the plant for inspection for a period of two years.

47 FR 57670

(q) A licensee authorized to possess and/or operate a nuclear power reactor shall follow and maintain in effect emergency plans which meet the standards in § 50.47(b) of this part and the requirements in Appendix E to this Part. A licensee authorized to possess and/or operate a research reactor or a fuel facility shall follow and maintain in effect emergency plans which meet the requirements in Appendix E of this part. The nuclear power reactor licensee may make changes to these plans without Commission approval only if such changes do not decrease the effectiveness of the plans and the plans, as changed, continue to meet the standards of §§ 50.47(b) of this part and the requirements of Appendix E of this Part. The research reactor licensee and/or the fuel facility licensee may make changes to these plans without Commission approval only if such changes do not decrease the effectiveness of the plans and the plans, as changed, continue to meet the requirements of Appendix E of this part. Proposed changes that decrease the effectiveness of the approved emergency plans shall not be implemented without application to and approval by the Commission. The licensee shall furnish one copy of each proposed change for approval to the Administrator of the appropriate NRC Regional Office specified in Appendix D of Part 20 of this chapter and two copies to the Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, DC 20555. If a change is made without approval, the licensee shall furnish one copy to the Administrator of the appropriate NRC Regional Office specified in Appendix D of Part 20 of this chapter and two copies of the Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, DC 20555 within 30 days after the change is made.

47 FR 57670

47 FR 19512

(r) Each licensee who is authorized to possess and/or operate a research or test reactor facility with an authorized power level greater than or equal to 2 MW thermal, under a licensee of the type specified in § 50.21(c), shall submit emergency plans complying with 10 CFR Part 50, Appendix E, to the Director of the Office of Nuclear Reactor Regulation for approval by September 7, 1982. Each licensee who is authorized to possess and/or operate a research or test reactor facility with an authorized power level less than 2 MW thermal, under a license of the type specified in § 50.21(c), shall submit emergency plans complying with 10 CFR Part 50, Appendix E, to the Director of the Office of Nuclear Reactor Regulation for approval by November 3, 1982.

47 FR 41336

(s)(1) Each licensee who is authorized to possess and/or operate a nuclear power reactor shall submit to NRC within 60 days of the effective date of this amendment the radiological emergency response plans of State and local governmental entities in the United States that are wholly or partially within a plume exposure pathway EPZ, as well as the plans of State governments wholly or partially within an ingestion pathway EPZ.[1,2] Ten (10) copies of the above plans shall be forwarded to the Director of Nuclear Reactor Regulation with 3 copies to the Administrator of the appropriate NRC regional office. Generally, the plume exposure pathway EPZ for nuclear power reactors shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius. The exact size and configuration of the EPZs for a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The size of the EPZs also may be determined on a case-by-case basis for gas-cooled nuclear reactors and for reactors with an authorized power level less than 250 MW thermal. The plans for the ingestion pathway EPZ shall focus on such actions as are appropriate to protect the food ingestion pathway.

47 FR 41336

46 FR 63031

(2)(i) For operating power reactors, the licensee, State, and local emergency response plans shall be implemented by April 1, 1981, except as provided in Section IV.D.3 of Appendix E to this part.

(ii) If after April 1, 1981, the NRC finds that the state of emergency preparedness does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency (*including findings based on requirements of Appendix E, Section IV.D.3*) and if the deficiencies (*including deficiencies based on requirements of Appendix E, Section IV.D.3*) are not corrected within four months of that finding, the Commission will determine whether the reactor shall be shut down until such deficiencies are remedied or whether other enforcement action is appropriate. In determining whether a shutdown or other enforcement action is appropriate, the Commission shall take into account, among other factors, whether the licensee can demonstrate to the Commission's satisfaction that the deficiencies in the plan are not significant for the plant in question, or that adequate interim compensating actions have been or will be taken promptly, or that that there are other compelling reasons for continued operation.

[1] Emergency Planning Zones (EPZs) are discussed in NUREG-0396; EPA 520/1-78-016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants," December 1978.

[2] If the State and local emergency response plans have been previously provided to the NRC for inclusion in the facility docket, the applicant need only provide the appropriate reference to meet this requirement.

(3) The NRC will base its finding on a review of the FEMA findings and determinations as to whether State and local emergency plans are adequate and capable of being implemented, and on the NRC assessment as to whether the licensee's emergency plans are adequate and capable of being implemented. Nothing in this paragraph shall be construed as limiting the authority of the Commission to take action under any other regulation or authority of the Commission or at any time other than that specified in this paragraph.

(t) A nuclear power reactor licensee shall provide for the development, revision, implementation, and maintenance of its emergency preparedness program. To this end, the licensee shall provide for a review of its emergency preparedness program at least every 12 months by persons who have no direct responsibility for implementation of the emergency preparedness program. The review shall include an evaluation for adequacy of interfaces with State and local governments and of licensee drills, exercises, capabilities, and procedures. The results of the review, along with recommendations for improvements, shall be documented, reported to the licensee's corporate and plant management, and retained for a period of five years. The part of the review involving the evaluation for adequacy of interface with State and local governments shall be available to the appropriate State and local governments.

(u) Within 60 days after the effective date of this amendment, each nuclear power reactor licensee shall submit to the NRC plans for coping with emergencies that meet standards in § 50.47(b) and the requirements of Appendix E to this part.

[45 FR 55402]

(v) Each licensee subject to the requirements of Part 73 of this chapter shall ensure that physical security, safeguards contingency and guard qualification and training plans and other related Safeguards Information are protected against unauthorized disclosure in accordance with the requirements of § 73.21 of this chapter, as appropriate.

[46 FR 51718]

(w) Each electric utility licensee under this part for a production or utilization facility of the type described in § 50.21(b) or § 50.22 shall, by June 29, 1982, take reasonable steps to obtain on-site property damage insurance available at reasonable costs and on reasonable terms from private sources or to demonstrate to the satisfaction of the Commission that it possesses an equivalent amount of protection covering the facility, *Provided*, that:

(1) This insurance must have a minimum coverage limit no less than the combined total of (i) that offered by either American Nuclear Insurers (ANI) and Mutual Atomic Energy Reinsurance Pool (MAERP) jointly or Nuclear Mutual Limited (NML); plus (ii) that offered by Nuclear Electric Insurance Limited (NEIL), the Edison Electric Institute (EEI), ANI and MAERP jointly, or NML as excess property insurance;

(2) The licensee shall, within ninety (90) days of any increases in policy limits for primary or excess coverage that it has obtained pursuant to this paragraph, take reasonable steps to obtain these increases; and

(3) When a licensee is prohibited from purchasing on-site property damage insurance because of state or local law, the licensee shall purchase the specific amount of such insurance found by the NRC to be reasonably available to that licensee, or to obtain an equivalent amount of protection; and

(4) The licensee shall report on April 1 of each year to the NRC as to the present levels of this insurance or financial protection it maintains and the sources of this insurance or protection.

[47 FR 13750]

(x) A licensee may take reasonable action that departs from a license condition or a technical specification (contained in a license issued under this part) in an emergency when this action is immediately needed to protect the public health and safety and no action consistent with license conditions and technical specifications that can provide adequate or equivalent protection is immediately apparent.

(y) Licensee action permitted by paragraph (x) of this section shall be approved, as a minimum, by a licensed senior operator prior to taking the action.

[48 FR 13966]

(z) Each licensee with a utilization facility licensed pursuant to sections 103 or 104b. of the Act shall immediately notify the NRC Operations Center of the occurrence of any event specified in § 50.72 of this part.

[48 FR 39039]

[47 FR 13750]

(aa) The license shall be subject to all conditions deemed imposed as a matter of law by sections 401(a)(2) and 401(d) of the Federal Water Pollution Control Act, as amended (33 U.S.C.A. 1341(a)(2) and (d).)

[49 FR 9352]

(bb) For operating nuclear power reactors, the licensee shall, no later than 5 years before expiration of the reactor operating license, submit written notification to the Commission for its review and preliminary approval of the program by which the licensee intends to manage and provide funding for the management of all irradiated fuel at the reactor upon expiration of the reactor operating license until title to the irradiated fuel and possession of the fuel is transferred to the Secretary of Energy for its ultimate disposal in a repository. Final Commission review will be undertaken as part of any proceeding for continued licensing under Part 50 or Part 72. The licensee must demonstrate to NRC that the elected actions will be consistent with NRC requirements for licensed possession of irradiated nuclear fuel and that the actions will be implemented on a timely basis. Where implementation of such actions require NRC authorizations, the licensee shall verify in the notification that submittals for such actions have been or will be made to NRC and shall identify them. A copy of the notification shall be retained by the licensee as a record until expiration of the reactor operating license. The licensee shall notify the NRC of any significant changes in the proposed waste management program as described in the initial notification.

[49 FR 34688]

42 FR 43385

§ 50.55 Conditions of construction permits.

Each construction permit shall be subject to the following terms and conditions:

(a) The permit shall state the earliest and latest dates for completion of the construction or modification.

(b) If the proposed construction or modification of the facility is not completed by the latest completion date, the permit shall expire and all rights thereunder shall be forfeited: *Provided, however,* That upon good cause shown the Commission will extend the completion date for a reasonable period of time. The Commission will recognize, among other things, developmental problems attributable to the experimental nature of the facility or fire, flood, explosion, strike, sabotage, domestic violence, enemy action, an act of the elements, and other acts beyond the control of the permit holder, as a basis for extending the completion date.

36 FR 11423

(c) Except as modified by this section and § 50.55a, the construction permit shall be subject to the same conditions to which a license is subject.

35 FR 19555

(d) At or about the time of completion of the construction or modification of the facility, the applicant will file any additional information needed to bring the original application for license up to date, and will file an application for an operating license or an amendment to an application for a license to construct and operate the facility for the issuance of an operating license, as appropriate, as specified in § 50.30(d) of this part.

37 FR 6459

(e) (1) If the permit is for construction of a nuclear power plant, the holder of the permit shall notify the Commission of each deficiency found in design and construction, which, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at any time throughout the expected lifetime of the plant, and which represents:

(i) A significant breakdown in any portion of the quality assurance program conducted in accordance with the requirements of Appendix B to this part; or

37 FR 6459

(ii) A significant deficiency in final design as approved and released for construction such that the design does not conform to the criteria and bases stated in the safety analysis report or construction permit; or

(iii) A significant deficiency in construction of or significant damage to a structure, system, or component which will require extensive evaluation, extensive redesign, or extensive repair to meet the criteria and bases stated in the safety analysis report or construction permit or to otherwise establish the adequacy of the structure, system, or component to perform its intended safety function; or

(iv) A significant deviation from performance specifications which will require extensive evaluation, extensive redesign, or extensive repair to establish the adequacy of a structure, system, or component to meet the criteria and bases stated in the safety analysis report or construction permit or to otherwise establish the adequacy of the structure, system, or component to perform its intended safety function.

47 FR 41336

(2) The holder of a construction permit shall within 24 hours notify the appropriate Nuclear Regulatory Commission Regional Office of each reportable deficiency.

41 FR 16445

(3) The holder of a construction permit shall also submit a written report on a reportable deficiency within thirty (30) days to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter. Copies of such report shall be sent to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

37 FR 6459

The report shall include a description of the deficiency, an analysis of the safety implications and the corrective action taken, and sufficient information to permit analysis and evaluation of the deficiency and of the corrective action. If sufficient information is not available for a definitive report to be submitted within 30 days, an interim report containing all available information shall be filed, together with a statement as to when a complete report will be filed.

(4) Remedial action may be taken both prior to and after notification of the Division of Inspection and Enforcement subject to the risk of subsequent disapproval of such action by the Commission.

48 FR 1026

(f)(1) Each nuclear power plant or fuel reprocessing plant construction permit holder subject to the quality assurance criteria in Appendix B of this part shall implement, pursuant to § 50.34(a)(7) of this part, the quality assurance program described or referenced in the Safety Analysis Report, including changes to that report.

(2) Each construction permit holder described in paragraph (f)(1) of this section shall, by June 10, 1983, submit to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter the current description of the quality assurance program it is implementing for inclusion in the Safety Analysis Report, unless there are no changes to the description previously accepted by NRC. This submittal must identify changes made to the quality assurance program description since the description was submitted to NRC. (Should a permit holder need additional time beyond June 10, 1983 to submit its current quality assurance program description to NRC, it shall notify the appropriate NRC Regional Office in writing, explain why additional time is needed, and provide a schedule for NRC approval showing when its current quality assurance program description will be submitted.)

(3) After March 11, 1983, each construction permit holder described in paragraph (f)(1) of this section may make a change to a previously accepted quality assurance program description included or referenced in the Safety Analysis Report, provided the change does not reduce the commitments in the program description previously accepted by the NRC. Changes to the quality assurance program description that do not reduce the commitments must be submitted to NRC within 90 days. Changes to the quality assurance program description that do reduce the commitments must be submitted to NRC and receive NRC approval before implementation, as follows:

(i) Changes made to the Safety Analysis Report must be submitted for review to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter; to the Resident Inspector; and to the Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Changes made to NRC-accepted quality assurance topical report descriptions must be submitted to the Document Control Desk, U.S. Nuclear Regulatory

48 FR 1026

Commission, Washington, D.C. 20555, and to the NRC Region IV Vendor Program Branch.

(ii) The submittal of a change to the Safety Analysis Report quality assurance program description must include all pages affected by that change and must be accompanied by a forwarding letter identifying the change, the reason for the change, and the basis for concluding that the revised program incorporating the change continues to satisfy the criteria of Appendix B of this part and the Safety Analysis Report quality assurance program description commitments previously accepted by the NRC (the letter need not provide the basis for changes that correct spelling, punctuation, or editorial items).

(iii) A copy of the forwarding letter identifying the changes must be maintained as a facility record for three years.

(iv) Changes to the quality assurance program description included or referenced in the Safety Analysis Report shall be regarded as accepted by the Commission upon receipt of a letter to this effect from the appropriate reviewing office of the Commission or 30 days after submittal to the Commission, whichever occurs first.

41 FR 23931

§ 50.55a Codes and standards.

Each operating license for a boiling or pressurized water-cooled nuclear power facility shall be subject to the conditions in paragraph (g) of this section and each construction permit for a utilization facility shall be subject to the following conditions in addition to those specified in § 50.55.

37 FR 17021

(a)(1) Structures, systems, and components shall be designed, fabricated, erected, constructed, tested, and inspected to quality standards commensurate with the importance of the safety function to be performed.

49FR10657

(2) Systems and components of boiling and pressurized water-cooled nuclear power reactors must meet the requirements of the ASME Boiler and Pressure Vessel Code specified in paragraphs (b), (c), (d), (e), and (g) of this section. Protection systems of nuclear power reactors of all types must meet the requirements specified in paragraph (h) of this section.

49 FR 9711

(3) Proposed alternatives to the requirements of paragraphs (c), (d), (e), (g), and (h) of this section or portions thereof may be used when authorized by the Director of the Office of Nuclear Reactor Regulation. The applicant must demonstrate that (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements of this section would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety.

46 FR 2015

(b) The ASME Boiler and Pressure Vessel Code, which is referenced in the following paragraphs, was approved for incorporation by reference by the Director of the Federal Register.

A notice of any changes made to the material incorporated by reference will be published in the FEDERAL REGISTER. Copies of the ASME Boiler and Pressure Vessel Code may be purchased from the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th St., New York, NY 10017. It is also available for inspection at the Nuclear Regulatory Commission's Public Document Room, 1717 H St. NW., Washington, D.C.

48 FR 50878 (1) As used in this section, references to Section III of the ASME Boiler and Pressure Vessel Code refer to Section III, Division 1, and include editions through the 1980 Edition and addenda through the Summer 1982 Addenda.

48 FR 55332 (2) As used in this section, references to Section XI of the ASME Boiler and Pressure Vessel Code refer to Section XI, Division 1 and include editions through the 1980 Edition and addenda through the Winter 1981 Addenda, subject to the following limitations and modifications:

46 FR 63208 (i) *"Limitations on specific editions and addenda."* When applying the 1974 Edition, only the addenda through the Summer 1975 Addenda may be used. When applying the 1977 Edition, all of the addenda through the Summer 1978 Addenda must also be used. Addenda and editions subsequent to the Summer 1978 Addenda, that are incorporated by reference in paragraph (b)(2) of this section are not affected by these limitations.

44 FR 5792 (ii) *Pressure-retaining welds in ASME Code Class 1 piping (applies to Table IWB-2500 and IWB-2500-1 and Category B-J).* If the facility's application for a construction permit was docketed prior to July 1, 1978, the extent of examination for Code Class 1 pipe welds may be determined by the requirements of Table IWB-2500 and Table IWB-2600 Category B-J of Section XI of the ASME Code in the 1974 Edition and addenda through the Summer 1975 Addenda or other requirements the Commission may adopt.

(iii) *Steam generator tubing (modifies Article IWB-2000).* If the technical specifications of a nuclear power plant include surveillance requirements for steam generators different than those in Article IWB-2000, the inservice inspection program for steam generator tubing shall be governed by the requirements in the technical specifications.

(iv) *Pressure-retaining welds in ASME Code Class 2 piping (applies to Tables IWC-2520 or IWC-2520-1, Category C-F).* (A) Appropriate Code Class 2 pipe welds in Residual Heat Removal Systems, Emergency Core Cooling Systems, and Containment Heat Removal Systems, shall be examined. The extent of examination for these systems shall be determined by the requirements of paragraph IWC-1220, Table IWC-2520 Category C-F and C-G, and paragraph IWC-2411 in the 1974 Edition and Addenda through the Summer 1975 Addenda of Section XI of the ASME Code.

44 FR 5792 (B) For a nuclear power plant whose application for a construction permit is docketed prior to July 1, 1978, the extent of examination for Code Class 2 pipe welds may be determined by the requirements of paragraph IWC-1220, Table IWC-2520 Category C-F and C-G and paragraph IWC-2411 in the 1974 Edition and Addenda through the Summer 1975 Addenda of Section XI of the ASME Code or other requirements the Commission may adopt.

(c) *Reactor coolant pressure boundary.* (1) Components which are part of the reactor coolant pressure boundary must meet the requirements for Class 1 components in Section III [4, 5] of the ASME Boiler and Pressure Vessel Code, except as provided in paragraphs (c)(2), (c)(3), and (c)(4) of this section.

(2) Components which are connected to the reactor coolant system and are part of the reactor coolant pressure boundary as defined in paragraph 50.2(v) of this part need not meet the requirements of paragraph (c)(1) of this section, Provided:

49 FR 9711 (i) In the event of postulated failure of the component during normal reactor operation, the reactor can be shut down and cooled down in an orderly manner, assuming makeup is provided by the reactor coolant makeup system; or

(ii) The component is or can be isolated from the reactor coolant system by two valves in series (both closed, both open, or one closed and the other open). Each open valve must be capable of automatic actuation and, assuming the other valve is open, its closure time must be such that, in the event of postulated failure of the component during normal reactor operation, each valve remains operable and the reactor can be shut down and cooled down in an orderly manner, assuming makeup is provided by the reactor coolant makeup system only.

(3) The Code Edition, Addenda, and optional Code Cases [6] to be applied to components of the reactor coolant pressure boundary must be determined by the provisions of paragraph NCA-1140, Subsection NCA of Section III of the ASME Boiler and Pressure Vessel Code, but (i) the edition and addenda applied to a component must be those which are incorporated by reference in paragraph (b)(1) of this section, (ii) the ASME Code provisions applied to the pressure vessel may be dated no earlier than the Summer 1972 Addenda of the 1971 edition, (iii) the ASME Code provisions applied to piping, pumps, and valves may be dated no earlier than the Winter 1972 Addenda of the 1971 edition, and (iv) ASME Code Cases [6] must have been determined suitable for use by the NRC.

49 FR 9711 (4) For a nuclear power plant whose construction permit was issued prior to May 14, 1984 the applicable Code Edition and Addenda for a component of the reactor coolant pressure boundary continue to be that Code Edition and Addenda that were required by Commission regulations for such component at the time of issuance of the construction permit.

49 FR 10657 (d) *Quality Group B components.* (1) For a nuclear power plant whose application for a construction permit is docketed after May 14, 1984 components classified Quality Group B [9] must meet the requirements for Class 2 Components in Section III of the ASME Boiler and Pressure Vessel Code.

(2) The Code Edition, Addenda, and optional Code Cases [6] to be applied to the systems and components identified in paragraph (d)(1) of this section must be determined by the rules of paragraph NCA-1140, Subsection NCA of Section III of the ASME Boiler Vessel and Pressure Code, but (i) the edition and addenda must be those which are incorporated by reference in paragraph (b)(1) of this section, (ii) the ASME Code provisions applied to the systems and components may be dated no earlier than the 1980 Edition, and (iii) the ASME Code Cases [6] must have been determined suitable for use by the NRC.

49 FR 9711 (e) *Quality Group C components:* (1) For a nuclear power plant whose application for a construction permit is docketed after May 14, 1984 components classified Quality Group C [9] must meet the requirements for Class 3 components in Section III of the ASME Boiler and Pressure Vessel Code.

(2) The Code Edition, Addenda, and optional Code Cases [6] to be applied to the systems and components identified in paragraph (e)(1) of this section must be determined by the rules of paragraph NCA-1140, subsection NCA of Section III of the ASME Boiler and Pressure Vessel Code, but (i) the edition and addenda must be those which are incorporated by reference in paragraph (b)(1) of this section, (ii) the ASME Code provisions applied to the systems and components may be dated no earlier than the 1980 Edition, and (iii) the ASME Code Cases [6] must have been determined suitable for use by the NRC.

(f) [reserved] 49 FR 9711

See footnotes at end of section.

(g) Inservice inspection requirements:

(1) For a boiling or pressurized water-cooled nuclear power facility whose construction permit was issued prior to January 1, 1971, components (including supports) shall meet the requirements of paragraphs (g)(4) and (g)(5) of this section to the extent practical. Components which are part of the reactor coolant pressure boundary[2] and their supports shall meet the requirements applicable to components which are classified as ASME Code Class 1. Other safety-related pressure vessels, piping, pumps and valves shall meet the requirements applicable to components which are classified as ASME Code Class 2 or Class 3.

(2) For a boiling or pressurized water-cooled nuclear power facility whose construction permit was issued on or after January 1, 1971, but before July 1, 1974, components (including supports) which are classified as ASME Code Class 1 and Class 2 shall be designed and be provided with access to enable the performance of (i) inservice examination of such components (including supports) and (ii) tests for operational readiness of pumps and valves, and shall meet the preservice examination requirements set forth in editions of Section XI of the ASME Boiler and Pressure Vessel Code and Addenda[3,6] in effect 6 months prior to the date of issuance of the construction permit. The components (including supports) may meet the requirements set forth in subsequent editions of this code and addenda which are incorporated by reference in paragraph (b) of this section, subject to the limitations and modifications listed therein.

(3) For a boiling or pressurized water-cooled nuclear power facility whose construction permit was issued on or after July 1, 1974:

(i) Components which are classified as ASME Code Class 1 shall be designed and be provided with access to enable the performance of inservice examination of such components and shall meet the preservice examination requirements set forth in Section XI of editions of the ASME Boiler and Pressure Vessel Code and Addenda[3,6] applied to the construction of the particular component in accordance with paragraph (c), (d), (e), or (f) of this section.

(ii) Components which are classified as ASME Code Class 2 and Class 3 and supports for components which are classified as ASME Code Class 1, Class 2, and Class 3 shall be designed and be provided with access to enable the performance of inservice examination of such components and shall meet the preservice examination requirements set forth in Section XI of editions of the ASME Boiler and Pressure Vessel Code and Addenda[3,6] applied to the construction of the particular component.

(iii) Pumps and valves which are classified as ASME Code Class 1 shall be designed and be provided with access to enable the performance of inservice testing of the pumps and valves for assessing operational readiness set forth in Section XI of editions of the ASME Boiler and Pressure Vessel Code and Addenda[3,6] applied to the construction of the particular pump or valve in accordance with paragraphs (e) and (f) of this section or the Summer 1973 Addenda, whichever is later.

(iv) Pumps and valves which are classified as ASME Code Class 2 and Class 3 shall be designed and be provided with access to enable the performance of inservice testing of the pumps and valves for assessing operational readiness set forth in Section XI of editions of the Boiler and Pressure Vessel Code and Addenda[3,6] applied to the construction of the particular pump or valve or the Summer 1973 Addenda, whichever is later.

(v) All components (including supports) may meet the requirements set forth in subsequent editions of codes and addenda or portions thereof which are incorporated by reference in paragraph (b) of this section, subject to the limitations and modifications listed therein.

(4) Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, components (including supports) which are classified as ASME Code Class 1, Class 2 and Class 3 shall meet the requirements, except design and access provisions and preservice examination requirements, set forth in Section XI of editions of the ASME Boiler and Pressure Vessel Code and Addenda that become effective subsequent to editions specified in paragraphs (g)(2) and (g)(3) of this section and are incorporated by reference in paragraph (b) of this section, to the extent practical within the limitations of design, geometry and materials of construction of the components.

(i) Inservice examinations of components, inservice tests to verify operational readiness of pumps and valves whose function is required for safety, and system pressure tests, conducted during the initial 120-month inspection interval shall comply with the requirements in the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section on the date 12 months prior to the date of issuance of the operating license, subject to the limitations and modifications listed in paragraph (b) of this section.

(ii) Inservice examinations of components, inservice tests to verify operational readiness of pumps and valves whose function is required for safety, and system pressure tests, conducted during successive 120-month inspection intervals shall comply with the requirements of the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section 12 months prior to the start of the 120-month inpsection interval, subject to the limitations and modifications listed in paragraph (b) of this section.

(iii) For a facility whose operating license was issued prior to March 1, 1976, the provisions of paragraph (g)(4) of this section are effective after September 1, 1976, at the start of the next-one third of a 120 month inspection interval. During that third of an inspection interval and the remainder of the inspection interval, the inservice examinations of components, tests to verify operational readiness of pumps and valves whose function is required for safety, and system pressure tests, for such facilities shall comply with the requirements in the latest edition and addenda of the Code incorporated by reference in paragraph (b) of this section on the date 12 months

See footnotes at end of section.

prior to the start of that third of an inspection interval, subject to the limitations and modifications listed in paragraph (b) of this section.

(iv) Inservice examinations of components, tests of pumps and valves, and system pressure tests, may meet the requirements set forth in subsequent editions and addenda that are incorporated by reference in paragraph (b) of this section, subject to the limitations and modifications listed in paragraph (b) of this section, and subject to Commission approval. Portions of editions or addenda may be used provided that all related requirements of the respective editions or addenda are met.

44 FR 57912

(5)(i) The inservice inspection program for a boiling or pressurized water-cooled nuclear power facility shall be revised by the licensee, as necessary, to meet the requirements of paragraph (g)(4) of this section.

41 FR 23931

(ii) If a revised inservice inspection program for a facility conflicts with the technical specification for the facility, the licensee shall apply to the Commission for amendment of the technical specifications to conform the technical specification to the revised program. This application shall be submitted at least 6 months before the start of the period during which the provisions become applicable as determined by paragraph (g)(4) of this section.

41 FR 6256

(iii) If the licensee has determined that conformance with certain code requirements is impractical for his facility, the licensee shall notify the Commission and submit information to support his determinations.

(iv) Where an examination or test requirement by the code or addenda is determined to be impractical by the licensee and is not included in the revised inservice inspection program as permitted by paragraph (g)(4) of this section, the basis for this determination shall be demonstrated to the satisfaction of the Commission not later than 12 months after the expiration of the initial 120-month period of operation from start of facility commercial operation and each subsequent 120-month period of operation during which the examination or test is determined to be impractical.

41 FR 6256

(3)(i) The Commission will evaluate determinations under paragraph (g)(5) of this section that code requirements are impractical. The Commission may grant such relief and may impose such alternative requirements as it determines is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

43 FR 56015

(ii) The Commission may require the licensee to follow an augmented inservice inspection program for systems and components for which the Commission deems that added assurance of structural reliability is necessary.

41 FR 6256

(h) Protection systems: For construction permits issued after January 1, 1971, protection systems shall meet the requirements set forth in editions or revisions of the Institute of Electrical and Electronics Engineers Standard: "Criteria for Protection Systems for Nuclear Power Generating Stations," (IEEE-279) in effect[7] on the formal docket date[8] of the application for a construction permit. Protection systems may meet the requirements set forth in subsequent editions or revisions of IEEE-279 which become effective.

42 FR 22882

(i) Power reactors for which a notice of hearing on an application for a provisional construction permit or a construction permit has been published on or before December 31, 1970, may meet the requirements of paragraphs (c)(1), (d)(1), (e)(1), and (f)(1) of this section instead of paragraphs (c)(2), (d)(2), (e)(2), and (f)(2) of this section, respectively.

48 FR 24008

(j) [reserved] 49 FR 9711

49FR9711

[1] [Reserved]

(footnotes 2 and 3) [reserved]

[4] USAS and ASME Code addenda issued prior to the Winter 1977 Addenda are considered to be "in effect" or "effective" 6 months after their date of issuance *and* after they are incorporated by reference in paragraph (b) of this section. Addenda to the ASME Code issued after the Summer 1977 Addenda are considered to be "in effect" or "effective" after the date of publication of the addenda *and* after they are incorporated by reference in paragraph (b) of this section.

[5] For ASME Code Editions and Addenda issued prior to the Winter 1977 Addenda, the Code Edition and Addenda applicable to the component is governed by the order or contract date for the component, not the contract date for the nuclear energy system. For the Winter 1977 addenda and subsequent editions and addenda the method for determining the applicable Code editions and addenda is contained in Paragraph NCA 1140 of Section III of the ASME Code.

[6] ASME Code cases which have been determined suitable for use by the Commission staff are listed in NRC Regulatory Guide 1.84, "Code Case Acceptability—ASME Section III Design and Fabrication" and NRC Regulatory Guide 1.85, "Code Case Acceptability—ASME Section III Materials." The use of other Code cases may be authorized by the Director of the Office of Nuclear Reactor Regulation upon request pursuant to § 50.55a(a)(3).

[7] For purposes of this regulation the proposed IEEE 279 became "in effect" on August 30, 1968, and the revised issue IEEE 279–1971 became "in effect" on June 3, 1971. Copies may be obtained from the Institute of Electrical and Electronics Engineers, United Engineering Center, 345 East 47th St., New York, NY 10017. Copies are available for inspection at the Commission's Technical Library, Phillips Building, 7920 Norfolk Avenue, Bethesda, Maryland.

[8] Where an application for a construction permit is submitted in four parts pursuant to the provisions of § 2.101(a-1) and Subpart F of Part 2 of this chapter, "the formal docket date of the application for a construction permit" for purposes of this section shall be the date of docketing of the information required by § 2.101(a-1) (2) or (3), whichever is later.

[9] Guidance for quality group classifications of components which are to be included in the safety analysis reports pursuant to § 50.34(a) and 50.34(b) may be found in Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water-Steam-, and Radiological-Waste-Containing Components of Nuclear Power Plants," and in Section 3.2.2 of NUREG–0800, "Standard Review Plan for Review of Safety Analysis Reports for Nuclear Power Plants."

*Amended 48 FR 5532

§ 50.55b Revoked 43 FR 49775

35 FR 11461

§ 50.56 Conversion of construction permit to license; or amendment of license.

Upon completion of the construction or alteration of a facility, in compliance with the terms and conditions of the construction permit and subject to any necessary testing of the facility for health or safety purposes, the Commission will, in the absence of good cause shown to the contrary issue a license of the class for which the construction permit was issued or an appropriate amendment of the license, as the case may be.

35 FR 5317

§ 50.57 Issuance of operating license. [1]

(a) Pursuant to § 50.56, an operating license may be issued by the Commission, up to the full term authorized by § 50.51, upon finding that:

(1) Construction of the facility has been substantially completed, in conformity with the construction permit and the application as amended, the provisions of the Act, and the rules and regulations of the Commission; and

(2) The facility will operate in conformity with the application as amended, the provisions of the Act, and the rules and regulations of the Commission; and

(3) There is reasonable assurance (i) that the activities authorized by the operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the regulations in this chapter; and

49FR35747

(4) The applicant is technically and financially qualified to engage in the activities authorized by the operating license in accordance with the regulations in this chapter. However, no finding of financial qualification is necessary for an electric utility applicant for an operating license for a utilization facility of the type described in § 50.21(b) or § 50.22.

[1] The Commission may issue a provisional operating license pursuant to the regulations in this part in effect on March 30, 1970, for any facility for which a notice of hearing on an application for a provisional operating license or a notice of proposed issuance of a provisional operating license has been published on or before that date.

35 FR 5317

(5) The applicable provisions of Part 140 of this chapter have been satisfied; and

(6) The issuance of the license will not be inimical to the common defense and security or to the health and safety of the public.

(b) Each operating license will include appropriate provisions with respect to any uncompleted items of construction and such limitations or conditions as are required to assure that operation during the period of the completion of such items will not endanger public health and safety.

37 FR 15127

(c) An applicant may, in a case where a hearing is held in connection with a pending proceeding under this section make a motion in writing, pursuant to this paragraph (c), for an operating license authorizing low-power testing (operation at not more than 1 percent of full power for the purpose of testing the facility), and further operations short of full power operation. Action on such a motion by the presiding officer shall be taken with due regard to the rights of the parties to the proceedings, including the right of any party to be heard to the extent that his contentions are relevant to the activity to be authorized. Prior to taking any action on such a motion which any party opposes, the presiding officer shall make findings on the matters specified in paragraph (a) of this section as to which there is a controversy, in the form of an initial decision with respect to the contested activity sought to be authorized. The Director of Nuclear Reactor Regulation will make findings on all other matters specified in paragraph (a) of this section. If no party opposes the motion, the presiding officer will issue an order pursuant to § 2.730(e) of this chapter, authorizing the Director of Nuclear Reactor Regulation to make appropriate findings on the matters specified in paragraph (a) of this section and to issue a license for the requested operation.

48 FR 46489

(d)(1) *Temporary operating license.* An applicant for an operating license, in a case where a hearing is required in a pending proceeding for the final operating license for a facility required to be licensed under sections 103 or 104b. of the Act, pending final action by the Commission on the application for the final operating license, may petition the Commission in writing, pursuant to section 192 of the Act, to § 2.305 of this chapter, and to this paragraph for (i) a temporary operating license for the facility authorizing fuel loading, testing, and operation at up to 5 percent rated full thermal power for a specified time and (ii) an amendment to the temporary operating license requesting for a specified time an incremental increase of the power level beyond that initially granted by the Commission up to full power. The Commission has full discretion to determine the initial power level up to 5 percent and the incremental increases in power levels it will authorize and the period for which the authorization is granted. It will not grant a temporary operating license or an amendment to that license for a period lasting beyond the date the final operating license is granted; and the temporary operating license and any amendments to that license will expire when the final operating license is issued.

48 FR 46489

(2) The initial petition for a temporary operating license for each such facility may be filed at any time after the filing of:

(i) The report of the Advisory Committee on Reactor Safeguards (ACRS) required by subsection 182b. of the Act;

(ii) The initial safety evaluation report (SER) on the application by the regulatory staff and the staff's first supplement to the SER prepared in response to the ACRS report;

(iii) The staff's final detailed statement on the environmental impact of the facility prepared pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969; and

(iv) A State, local, or utility emergency preparedness plan for the facility.

(3) Each petition for the issuance of a temporary operating license, or for an amendment to that license allowing operation at a specific power level greater than that authorized in the initial temporary operating license, shall be accompained by an affidavit or affidavits setting forth the specific facts upon which the petitioner relies to justify issuance of the temporary operating license or the amendment to that license.

(4) The Commission will publish a notice of each such petition in the **Federal Register** and in such trade or news publications as it deems appropriate to give reasonable notice to any persons who might have a potential interest in the grant of such a temporary operating license or amendment. The notice will inform such persons of the arrangements for their access to the petition and supporting affidavits. Any person may file affidavits in support of, or in opposition to, the petition within 30 days after the publication of such notice in the **Federal Register**.

(5) With respect to any such petition, the Commission may issue a temporary operating license, or subsequently amend the license to authorize temporary operation at a specific power level greater than that authorized in the initial temporary operating license, as determined by the Commission, upon finding that:

(i) In all respects, other than the conduct or completion of any required hearing, the requirements of law are met;

(ii) In accordance with such requirements, there is reasonable assurance that operation of the facility during the period of the temporary operating license in accordance with its terms and conditions will provide adequate protection to the public health and safety and to the environment during the period of temporary operation; and

(iii) Denial of the temporary operating license will result in delay between the date on which construction of the facility is sufficiently completed, in the judgment of the Commission, to permit issuance of the temporary operating license and the date on which a final operating license for such facility would otherwise be issued under the Act.

(6) Any final Commission order authorizing the issuance of any temporary operating license or an amendment to that license pursuant to section 192 of the Act and this paragraph will recite with specificity the reasons justifying the findings required by that section and this paragraph, and will be transmitted upon its issuance to the Committees on Interior and Insular Affairs and Energy and Commerce of the House of Representatives and the Committee on Environment and Public Works of the Senate.

(7) The temporary operating license will become effective upon its issuance and will contain such terms and conditions as the Commission may deem necessary, including the duration of the license and any provision for its extension.

(8) The Commission will suspend the temporary operating license if it finds that the applicant is not prosecuting the application for the final operating license with due diligence.

(9) The authority to issue new temporary operating licenses under section 192 of the Act and this paragraph expires on December 31, 1983.

48 FR 46489

§ 50.58 Hearings and report of the Advisory Committee on Reactor Safeguards.

39 FR 10554

(a) Each application for a construction permit or an operating license for a facility which is of a type described in § 50.21(b) or § 50.22, or for a testing facility, shall be referred to the Advisory Committee on Reactor Safeguards for a review and report. An application for an amendment to such a construction permit or operating license may be referred to the Advisory Committee on Reactor Safeguards for review and report. Any report shall be made part of the record of the application and available to the public, except to the extent that security classification prevents disclosure.

48 FR 14864

(b) The Commission will hold a hearing after at least 30-days' notice and publication once in the Federal Register on each application for a construction permit for a production or utilization facility which is of a type described in § 50.21(b) or § 50.22 of this part, or which is a testing facility. When a construction permit has been issued for such a facility following the holding of a public hearing and an application is made for an operating license or for an amendment to a construction permit or operating license, the Commission may hold a hearing after at least 30-days' notice and publication once in the Federal Register, or, in the absence of a request therefor by any person whose interest may be affected, may issue an operating license or an amendment to a construction permit or operating license without a hearing, upon 30-days' notice and publication in the Federal Register of its intent to do so. If the Commission finds, in an emergency situation, as defined in § 50.91, that no significant hazards consideration is presented by an application for an amendment to an operating license, it may dispense with public notice and comment and *may issue the amendment. If the Commission finds that exigent circumstances exist, as described in § 50.91, it may reduce the period provided for public notice and comment. Both in an emergency situation and in the case of exigent circumstances, the Commission will provide 30 days notice of opportunity for a hearing, though this notice may be published after issuance of the amendment if the Commission determines that no significant hazards considerations are involved. The Commission will use the standards in §50.92 to determine whether a significant hazards consideration is presented by an amendment to an operating license for a facility of the type described in § 50.21(b) or § 50.22, or which is a testing facility, and may make the amendment immediately effective, notwithstanding the pendency before it of a request for a hearing from any person, in advance of the holding and completion of any required hearing, where it has determined that no significant hazards consideration is involved. *Correction 48 FR 16649

48 FR 14864

§ 50.59 Changes, tests and experiments.

39 FR 10554

(a)(1) The holder of a license authorizing operation of a production or utilization facility may (i) make changes in the facility as described in the safety analysis report, (ii) make changes in the procedures as described in the safety analysis report, and (iii) conduct tests or experiments not described in the safety analysis report, without prior Commission approval, unless the proposed change, test or experiment involves a change in the technical specifications incorporated in the license or an unreviewed safety question.

42 FR 20138

(2) A proposed change, test, or experiment shall be deemed to involve an unreviewed safety question (i) if the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased; or (ii) if a possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report may be created; or (iii) if the margin of safety as defined in the basis for any technical specification is reduced.

39 FR 10554

(b) The licensee shall maintain records of changes in the facility and of changes in procedures made pursuant to this section, to the extent that such changes constitute changes in the facility as described in the safety analysis report or constitute changes in procedures as described in the safety analysis report. The licensee shall also maintain records of tests and experiments carried out pursuant to paragraph (a) of this section. These records shall include a written safety evaluation which provides the bases for the determination that the change, test or experiment does not involve an unreviewed safety question.

41 FR 16445

The licensee shall furnish to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter with a copy to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, annually or at such shorter intervals

as may be specified in the license, a report containing a brief description of such changes, tests, and experiments, including a summary of the safety evaluation of each. [41 FR 16445]

Any report submitted by a licensee pursuant to this paragraph will be made a part of the public record of the licensing proceeding. In addition to a signed original, 39 copies of each report of changes in a facility of the type described in § 50.21(b) or § 50.22 or a testing facility, and 12 copies of each report of changes in any other facility, shall be filed. [39 FR 10554]

The records of changes in the facility shall be maintained until the date of termination of the license, and records of changes in procedures and records of tests and experiments shall be maintained for a period of five years. [41 FR 18300]

(c) The holder of a license authorizing operation of a production or utilization facility who desires (1) a change in technical specifications or (2) to make a change in the facility or the procedures described in the safety analysis report or to conduct tests or experiments not described in the safety analysis report, which involve an unreviewed safety question or a change in technical specifications, shall submit an application for amendment of his license pursuant to § 50.90. [39 FR 10554]

§ 50.60 Acceptance criteria for fracture prevention measures for lightwater nuclear power reactors for normal operation.

(a) Except as provided in paragraph (b) of this section, all lightwater nuclear power reactors must meet the fracture toughness and material surveillance program requirements for the reactor coolant pressure boundary set forth in Appendices G and H to this part.

(b) Proposed alternatives to the described requirements in Appendices G and H of this part or portions thereof may be used when an exemption is granted by the Commission under § 50.12. In addition, the applicant must demonstrate that (1) compliance with the specified requirements would result in hardships or unusual difficulties without a compensating increase in the level of quality and safety, and (2) the proposed alternatives would provide an adequate level of quality and safety. [48 FR 24008]

§ 50.61 Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events. [50 FR 29937]

(a) *Definitions.* For the purposes of this section:

(1) "ASME Code" means the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section III, "Rules for the Construction of Nuclear Power Plant Components," edition and addenda as specified by § 50.55a, Codes and Standards.

(2) "Pressurized Thermal Shock Event" means an event or transient in pressurized water reactors (PWRs) causing severe overcooling (thermal shock) concurrent with or followed by significant pressure in the reactor vessel.

(3) "Reactor Vessel Beltline" means the region of the reactor vessel (shell material including welds, heat affected zones, and plates or forgings) that directly surrounds the effective height of the active core and adjacent regions of the reactor vessel that are predicted to experience sufficient neutron radiation damage to be considered in the selection of the most limiting material with regard to radiation damage.

(4) "Initial RT_{NDT}" means the reference temperature for a reactor vessel material as defined in the ASME Code, Paragraph NB-2331. RT_{NDT} means the reference temperature as adjusted for the effects of neutron radiation for the period of service in question.

(5) "RT_{PTS}" means the reference temperature calculated by the method given in paragraph (b)(2) of this section for use as a screening criterion.

(b) *Requirements.*

(1) For each pressurized water nuclear power reactor for which an operating license has been issued, the licensee shall submit projected values of RT_{PTS} (at the inner vessel surface) of reactor vessel beltline materials by giving values from the time of submittal to the expiration date of the operating license. The assessment must specify the bases for the projection, including the assumptions regarding core loading patterns. This assessment must be submitted by January 23, 1986, and must be updated whenever changes in core loadings, surveillance measurements, or other information indicate a significant change in projected values. [50 FR 29937]

(2) The pressurized thermal shock (PTS) screening criterion is 270 °F for plates, forgings, and axial weld materials, or 300 °F for circumferential weld materials. For the purpose of comparison with this criterion, the value of RT_{PTS} for the reactor vessel must be calculated as follows. The calculation must be made for each weld and plate, or forging, in the reactor vessel beltline. For each material, RT_{PTS} is the lower of the results given by Equations 1 and 2.

Equation 1: $RT_{PTS} = I + M + [-10 + 470\,Cu + 350\,Cu\,Ni]\,f^{(0.28 - 0.10 \log f)}$

Equation 2: $RT_{PTS} = I + M + 283\,f^{(0.28 - 0.10 \log f)}$

(i) "I" means the initial reference temperature of the unirradiated material measured as defined in the ASME Code, Paragraph NB-2331. If a measured value is not available, the following generic mean values must be used: 0 °F for welds made with Linde 80 flux, and −56 °F for welds made with Linde 0091, 1092 and 124 and ARCOS B-5 weld fluxes.

(ii) "M" means the margin to be added to cover uncertainties in the values of initial RT_{NDT}, copper and nickel content, fluence and the calculational procedures. In Equation 1, M = 48 °F if a measured value of I was used, and M = 59 °F if the generic mean value of I was used. In Equation 2, M = 0 °F if a measured value of I was used, and M = 34 °F if the generic mean value of I was used.

(iii) "Cu" and "Ni" mean the best estimate weight percent of copper and nickel in the material. The source of these values must be included in the assessment. The relationship of the material, on which any measurements were made, to the actual material in the pressure vessel must be described.

(iv) "f" means the best estimate neutron fluence, in unit of 10^{19} n/cm^2 (E greater than or equal to 1 MeV), at the clad-base-metal interface on the inside surface of the vessel at the location where the material in question receives the highest fluence for the period of service in question.

(3) For each pressurized water nuclear power reactor for which the value of RT_{PTS} for any material in the beltline is projected to exceed the PTS screening criterion before the expiration date of the operating license, the licensee shall submit by April 23, 1986, an analysis and schedule for implementation of such flux reduction programs as are reasonably practicable to avoid exceeding the PTS screening criterion set forth in paragraph (b)(2). The schedule for implementation of flux reduction measures may take into account the schedule for submittal and anticipated Commission approval of detailed plant-specific analyses, submitted to demonstrate acceptable risk at values of RT_{PTS} above the screening limit due to plant modifications, new information or new analysis techniques. [50 FR 29937]

(4) For each pressurized water nuclear power reactor for which the analysis required by paragraph (b)(3) of this section indicates that no reasonably practicable flux reduction program will prevent the value of RT_{PTS} from exceeding the PTS screening criterion before the expiration date of the operating license, the licensee shall submit a safety analysis to determine what, if any, modifications to equipment, systems, and operation are necessary to prevent potential failure of the reactor vessel as a result of postulated PTS events if continued operation beyond the screening criterion is allowed. In the analysis, the licensee may determine reactor vessel materials properties based on available

information, research results, and plant surveillance data, and may use probabilistic fracture mechanics techniques. This analysis must be submitted at least 3 years before the value of RT_{PTS} as defined in paragraph (b)(2) of this section is projected to exceed the PTS screening criterion or by one year after issuance of the Commission Guidance and Acceptance Criteria for these analyses, whichever is later.

(5) After consideration of the licensee's analyses (including effects of proposed corrective actions, if any) submitted in accordance with paragraphs (b)(3) and (b)(4) of this section, the Commission may, on a case-by-case basis, approve operation of the facility at values of RT_{PTS} in excess of the PTS screening criterion. The Commission will consider factors significantly affecting the potential for failure of the reactor vessel in reaching a decision.

(6) If the Commission concludes, pursuant to paragraph (b)(5) of this section, that operation of the facility at value of RT_{PTS} in excess of the PTS screening criterion cannot be approved on the basis of the licensee's analyses submitted in accordance with paragraphs (b)(3) and (b)(4) of this section, the licensee must request and receive Commiss on approval prior to any operation beyond the criterion. The request must be based upon modifications to equipment, systems, and operation of the facility in addition to those previously proposed in the submitted analyses that would reduce the potential for failure of the reactor vessel due to PTS events, or upon further analyses based upon new information or improved methodology.

50 FR 29937

[49 FR 26036]

§ 50.62 Requirements for reduction of risk from anticipated transients without scram (ATWS) events for light-water-cooled nuclear power plants.

(a) *Applicability.* The requirements of this section apply to all commercial light-water-cooled nuclear power plants

(b) *Definition.* For purposes of this section, "Anticipated Transient Without Scram" (ATWS) means an anticipated operational occurrence as defined in Appendix A of this part followed by the failure of the reactor trip portion of the protection system specified in General Design Criterion 20 of Appendix A of this part.

(c) *Requirements.* (1) Each pressurized water reactor must have equipment from sensor output to final actuation device, that is diverse from the reactor trip system, to automatically initiate the auxiliary (or emergency) feedwater system and initiate a turbine trip under conditions indicative of an ATWS. This equipment must be designed to perform its function in a reliable manner and be independent (from sensor output to the final actuation device) from the existing reactor trip system.

(2) Each pressurized water reactor manufactured by Combustion Engineering or by Babcock and Wilcox must have a diverse scram system from the sensor output to interruption of power to the control rods. This scram system must be designed to perform its function in a reliable manner and be independent from the existing reactor trip system (from sensor output to interruption of power to the control rods).

(3) Each boiling water reactor must have an alternate rod injection (ARI) system that is diverse (from the reactor trip system) from sensor output to the final actuation device. The ARI system must have redundant scram air header exhaust valves. The ARI must be designed to perform its function in a reliable manner and be independent (from the existing reactor trip system) from sensor output to the final actuation device.

(4) Each boiling water reactor must have a standby liquid control system (SLCS) with a minimum flow capacity and boron content equivalent in control capacity to 86 gallons per minute of 13 weight percent sodium pentaborate solution. The SLCS and its injection location must be designed to perform its function in a reliable manner. The SLCS initiation must be automatic and must be designed to perform its function in a reliable manner for plants granted a construction permit after July 26, 1984, and for plants granted a construction permit prior to July 26, 1984, that have already been designed and built to include this feature.

(5) Each boiling water reactor must have equipment to trip the reactor coolant recirculating pumps automatically under conditions indicative of an ATWS. This equipment must be designed to perform its function in a reliable manner.

(6) Information sufficient to demonstrate to the Commission the adequacy of items in paragraphs (c)(1) through (c)(5) of this section shall be submitted to the Director, Office of Nuclear Reactor Regulation.

(d) *Implementation.* By 180 days after the issuance of the QA guidance for non-safety related components each licensee shall develop and submit to the Director of the Office of Nuclear Reactor Regulation a proposed schedule for meeting the requirements of paragraphs (c)(1) through (c)(5) of this section. Each shall include an explanation of the schedule along with a justification if the schedule calls for final implementation later than the second refueling outrage after July 26, 1984, or the date of issuance of a license authorizing operation above 5 percent of full power. A final schedule shall then be mutually agreed upon by the Commission and licensee.

[49 FR 26036]

§ 50.65 [Deleted 43 FR 6915.]

[45 FR 13434]

INSPECTIONS, RECORDS, REPORTS, NOTIFICATIONS

[21 FR 355]

§ 50.70 Inspections.

(a) Each licensee and each holder of a construction permit shall permit inspection, by duly authorized representatives of the Commission, of his records, premises, activities, and of licensed materials in possession or use, related to the license or construction permit as may be necessary to effectuate the purposes of the act, including section 105 of the Act.

[44 FR 47918]

(b)(1) Each licensee and each holder of a construction permit shall upon request by the Director, Office of Inspection and Enforcement, provide rent-free office space for the exclusive use of the Commission inspection personnel. Heat, air conditioning, light, electrical outlets and janitorial services shall be furnished by each licensee and each holder of a construction permit. The office shall be convenient to and have full access to the facility and shall provide the inspector both visual and acoustic privacy.

(2) For a site with a single power reactor or fuel facility licensed pursuant to Part 50, the space provided shall be adequate to accommodate a full-time inspector, a part-time secretary and transient NRC personnel and will be generally commensurate with other office facilities at the site. A space of 250 square feet either within the site's office complex or in an office trailer or other on site space is suggested as a guide. For sites containing multiple power reactor units or fuel facilities, additional space may be requested to accommodate additional full-time inspector(s). The office space that is provided shall be subject to the approval of the Director, Office of Inspection and Enforcement. All furniture, supplies and communication equipment will be furnished by the Commission.

[47 FR 41336]

(3) The licensee or construction permit holder shall afford any NRC resident inspector assigned to that site, or other NRC inspectors identified by the Regional Administrator as likely to inspect the facility, immediate unfettered access, equivalent to access provided regular plant employees, following proper identification and compliance with applicable access control meaures for security, radiological protection and personal safety.

[33 FR 9704]

§ 50.71 Maintenance of records, making of reports.

(a) Each licensee and each holder of a construction permit shall maintain such records and make such reports, in connection with the licensed activity, as may be required by the conditions of the license or permit or by the rules, regulations, and orders of the Commission in effectuating the purposes of the Act, including section 105 of the Act.

[41 FR 16445]

(b) With respect to any production or utilization facility of a type described in § 50.21(b) or § 50.22 of this part, or a testing facility, each licensee and each holder of a construction permit shall, upon each issuance of its annual financial report, including the certified financial statements, file a copy thereof with the Director of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

(c) Records which are required by the regulations in this part, by license condition, or by technical specification, shall be maintained for the period specified by the appropriate regulation, license condition, or technical specification. If a retention period is not otherwise specified, such records shall be maintained until the Commission authorizes their disposition.

(d)(1) Records which must be maintained pursuant to this part may be the original or a reproduced copy or microform if such reproduced copy or microform is duly authenticated by authorized personnel and the microform is capable of producing a clear and legible copy after storage for the period specified by Commission regulations. [1 FR 18300]

(2) If there is a conflict between the Commission's regulations in this part, license condition, or technical specification, or other written Commission approval or authorization pertaining to the retention period for the same type of record, the retention period specified in the regulations in this part for such records shall apply unless the Commission, pursuant to § 50.12 of this part, has granted a specific exemption from the record retention requirements specified in the regulations in this part.

(e) Each person licensed to operate a nuclear power reactor pursuant to the provisions of § 50.21 or § 50.22 of this part shall update periodically, as provided in paragraphs (e)(3) and (4) of this section, the final safety analysis report (FSAR) originally submitted as part of the application for the operating license, to assure that the information included in the FSAR contains the latest material developed. This submittal shall contain all the changes necessary to reflect information and analyses submitted to the Commission by the licensee or prepared by the licensee pursuant to Commission requirement since the submission of the original FSAR or, as appropriate, the last updated FSAR. The updated FSAR shall be revised to include the effects of: all changes made in the facility or procedures as described in the FSAR; all safety evaluations performed by the licensee either in support of requested license amendments or in support of conclusions that changes did not involve an unreviewed safety question; and all analyses of new safety issues performed by or on behalf of the licensee at Commission request. The updated information shall be appropriately located within the FSAR. [45 FR 30614]

(1) Revisions containing updated information shall be submitted on a replacement-page basis and shall be accompanied by a list which identifies the current pages of the FSAR following page replacement. One signed original and 12 additional copies of the required information shall be filed with the Director of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

(2) The submittal shall include (i) a certification by a duly authorized officer of the licensee that either the information accurately presents changes made since the previous submittal, necessary to reflect information and analyses submitted to the Commission or prepared pursuant to Commission requirement, or that no such changes were made; and (ii) an identification of changes made under the provisions of § 50.59 but not previously submitted to the Commission.

(3)(i) A revision of the original FSAR containing those original pages that are still applicable plus new replacement pages shall be filed within 24 months of either July 22, 1980, or the date of issuance of the operating license, whichever is later, and shall bring the FSAR up to date as of a maximum of 6 months prior to the date of filing the revision.

(ii) Not less than 15 days before § 50.71(e) becomes effective, the Director of the Office of Nuclear Reactor Regulation shall notify by letter the licensees of those nuclear power plants initially subject to the NRC's systematic evaluation program that they need not comply with the provisions of this section while the program is being conducted at their plant. The Director of the Office of Nuclear Reactor Regulation will notify by letter the licensee of each nuclear power plant being evaluated when the systematic evaluation program has been completed. Within 24 months after receipt of this notification, the licensee shall file a complete FSAR which is up to date as of a maximum of 6 months prior to the date of filing the revision. [45 FR 30614]

(4) Subsequent revisions shall be filed no less frequently than annually and shall reflect all changes up to a maximum of 6 months prior to the date of filing.

(5) Each replacement page shall include both a change indicator for the area changed, e.g., a bold line vertically drawn in the margin adjacent to the portion actually changed, and a page change identification (date of change or change number or both).

§ 50.72 Immediate notification requirements for operating nuclear power reactors.

(a) *General Requirements.*[1] (1) Each nuclear power reactor licensee licensed under § 50.21(b) or § 50.22 of this part shall notify the NRC Operations Center via the Emergency Notification System of: [48 FR 40882]

(i) The declaration of any of the Emergency Classes specified in the licensee's approved Emergency Plan;[2] or [48 FR 39039]

(ii) Of those non-Emergency events specified in paragraph (b) of this section. [48 FR 40882]

(2) If the Emergency Notification System is inoperative, the licensee shall make the required notifications via commercial telephone service, other dedicated telephone system, or any other method which will ensure that a report is made as soon as practical to the NRC Operations Center.[3]

(3) The licensee shall notify the NRC immediately after notification of the appropriate State or local agencies and not later than one hour after the time the licensee declares one of the Emergency Classes. [48 FR 39039]

(4) When making a report under paragraph (a)(3) of this section, the licensee shall identify:

(i) The Emergency Class declared; or

(ii) Either paragraph (b)(1), "One-Hour Report," or paragraph (b)(2), "Four-Hour Report," as the paragraph of this section requiring notification of the Non-Emergency Event.

(b) *Non-Emergency Events.* (1) *One-Hour Reports.* If not reported as a declaration of an Emergency Class under paragraph (a) of this section, the licensee shall notify the NRC as soon as practical and in all cases within one hour of the occurrence of any of the following:

(i)(A) The initiation of any nuclear plant shutdown required by the plant's Technical Specifications.

(B) Any deviation from the plant's Technical Specifications authorized pursuant to § 50.54(x) of this part.

(ii) Any event or condition during operation that results in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or results in the nuclear power plant being: [48 FR 40882]

(A) In an unanalyzed condition that significantly compromises plant safety;

(B) In a condition that is outside the design basis of the plant; or [48 FR 39039]

(C) In a condition not covered by the plant's operating and emergency procedures.

[1] Other requirements for immediate notification of the NRC by licensed operating nuclear power reactors are contained elsewhere in this chapter, in particular, § 20.205, § 20.403, § 50.36, and § 73.71.

[2] These Emergency Classes are addressed in Appendix E of this part.

[3] Commercial telephone number of the NRC Operations Center is (202) 951-0550.

(next page is 50-34a)

[48 FR 40882]
(iii) Any natural phenomenon or other external condition that poses an actual threat to the safety of the nuclear power plant or significantly hampers site personnel in the performance of duties necessary for the safe operation of the plant.

[48 FR 39039]
(iv) Any event that results or should have resulted in Emergency Core Cooling System (ECCS) discharge into the reactor coolant system as a result of a valid signal.

(v) Any event that results in a major loss of emergency assessment capability, offsite response capability, or communications capability (e.g., significant portion of control room indication, Emergency Notification System, or offsite notification system).

[48 FR 40882]
(vi) Any event that poses an actual threat to the safety of the nuclear power plant or significantly hampers site personnel in the performance of duties necessary for the safe operation of the nuclear power plant including fires, toxic gas releases, or radioactive releases.

[48 FR 39039; 45 FR 39039]
(2) *Four-Hour Reports.* If not reported under paragraphs (a) or (b)(1) of this section, the licensee shall notify the NRC as soon as practical and in all cases, within four hours of the occurrence of any of the following:

[48 FR 40882]
(i) Any event, found while the reactor is shut down, that, had it been found while the reactor was in operation, would have resulted in the nuclear power plant, including its principal safety barriers, being seriously degraded or being in an unanalyzed condition that significantly compromises plant safety.

(ii) Any event or condition that results in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS). However, actuation of an ESF, including the RPS, that results from and is part of the preplanned sequence during testing or reactor operation need not be reported.

[48 FR 39039]
(iii) Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to:

(A) Shut down the reactor and maintain it in a safe shutdown condition,

(B) Remove residual heat,

(C) Control the release of radioactive material, or

(D) Mitigate the consequences of an accident.

(iv)(A) Any airborne radioactive release that exceeds 2 times the applicable concentrations of the limits specified in Appendix B, Table II of Part 20 of this chapter in unrestricted areas, when averaged over a time period of one hour.

(B) Any liquid effluent release that exceeds 2 times the limiting combined Maximum Permissible Concentration (MPC) (see Note 1 of Appendix B to Part 20 of this chapter) at the point of entry into the receiving water (i.e., unrestricted area) for all radionuclides except tritium and dissolved noble gases, when averaged over a time period of one hour. (Immediate notifications made under this paragraph also satisfy the requirements of paragraphs (a)(2) and (b)(2) of § 20.403 of Part 20 of this chapter.)

(v) Any event requiring the transport of a radioactively contaminated person to an offsite medical facility for treatment.

(vi) Any event or situation, related to the health and safety of the public or onsite personnel, or protection of the environment, for which a news release is planned or notification to other government agencies has been or will be made. Such an event may include an onsite fatality or inadvertent release of radioactively contaminated materials.

[48 FR 39039]
(c) *Followup Notification.* With respect to the telephone notifications made under paragraphs (a) and (b) of this section, in addition to making the required initial notification, each licensee, shall during the course of the event:

(1) *Immediately report:* (i) any further degradation in the level of safety of the plant or other worsening plant conditions, including those that require the declaration of any of the Emergency Classes, if such a declaration has not been previously made, or (ii) any change from one Emergency Class to another, or (iii) a termination of the Emergency Class.

(2) *Immediately report:* (i) the results of ensuing evaluations or assessments of plant conditions, (ii) the effectiveness of response or protective measures taken, and (iii) information related to plant behavior that is not understood.

(3) Maintain an open, continuous communication channel with the NRC Operations Center upon request by the NRC.

[48 FR 33850]
§ 50.73 Licensee event report system.

(a) *Reportable events.* (1) The holder of an operating license for a nuclear power plant (licensee) shall submit a Licensee Event Report (LER) for any event of the type described in this paragraph within 30 days after the discovery of the event. Unless otherwise specified in this section, the licensee shall report an event regardless of the plant mode or power level, and regardless of the significance of the structure, system, or component that initiated the event.

(2) The licensee shall report:

(i)(A) The completion of any nuclear plant shutdown required by the plant's Technical Specifications; or

(B) Any operation or condition prohibited by the plant's Technical Specifications; or

(C) Any deviation from the plant's Technical Specifications authorized pursuant to § 50.54(x) of this part.

(ii) Any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded, or that resulted in the nuclear power plant being:

(A) In an unanalyzed condition that significantly compromised plant safety;

(B) In a condition that was outside the design basis of the plant; or

(C) In a condition not covered by the plant's operating and emergency procedures.

(iii) Any natural phenomenon or other external condition that posed an actual threat to the safety of the nuclear power plant or significantly hampered site personnel in the performance of duties necessary for the safe operation of the nuclear power plant.

(iv) Any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS). However, actuation of an ESF, including the RPS, that resulted from and was part of the preplanned sequence during testing or reactor operation need not be reported.

(v) Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to:

(A) Shut down the reactor and maintain it in a safe shutdown condition;

(B) Remove residual heat;

(C) Control the release of radioactive material; or

(D) Mitigate the consequences of an accident.

(vi) Events covered in paragraph (a)(2)(v) of this section may include one or more procedural errors, equipment failures, and/or discovery of design,

analysis, fabrication, construction, and/or procedural inadequacies. However, individual component failures need not be reported pursuant to this paragraph if redundant equipment in the same system was operable and available to perform the required safety function.

(vii) Any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to:

(A) Shut down the reactor and maintain it in a safe shutdown condition;

(B) Remove residual heat;

(C) Control the release of radioactive material; or

(D) Mitigate the consequences of an accident.

(viii)(A) Any airborne radioactivity release that exceeded 2 times the applicable concentrations of the limits specified in Appendix B, Table II of Part 20 of this chapter in unrestricted areas, when averaged over a time period of one hour.

(B) Any liquid effluent release that exceeded 2 times the limiting combined Maximum Permissible Concentration (MPC) (see Note 1 of Appendix B to Part 20 of this chapter) at the point of entry into the receiving water (i.e., unrestricted area) for all radionuclides except tritium and dissolved noble gases, when averaged over a time period of one hour.

(ix) Reports submitted to the Commission in accordance with paragraph (a)(2)(viii) of this section also meet the effluent release reporting requirements of paragraph 20.405(a)(5) of Part 20 of this chapter.

(x) Any event that posed an actual threat to the safety of the nuclear power plant or significantly hampered site personnel in the performance of duties necessary for the safe operation of the nuclear power plant including fires, toxic gas releases, or radioactive releases.

(b) *Contents.* The Licensee Event Report shall contain:

(1) A brief abstract describing the major occurrences during the event, including all component or system failures that contributed to the event and significant corrective action taken or planned to prevent recurrence.

(2)(i) A clear, specific, narrative description of what occurred so that knowledgeable readers conversant with the design of commercial nuclear power plants, but not familiar with the details of a particular plant, can understand the complete event.

(ii) The narrative description must include the following specific information as appropriate for the particular event:

(A) Plant operating conditions before the event.

(B) Status of structures, components, or systems that were inoperable at the start of the event and that contributed to the event.

(C) Dates and approximate times of occurrences.

(D) The cause of each component or system failure or personnel error, if known.

(E) The failure mode, mechanism, and effect of each failed component, if known.

(F) The Energy Industry Identification System component function identifier and system name of each component or system referred to in the LER.

(1) The Energy Industry Identification System is defined in: IEEE Std 803–1983 (May 16, 1983) Recommended Practices for Unique Identification Plants and Related Facilities—Principles and Definitions.

(2) IEEE Std 803–1983 has been approved for incorporation by reference by the Director of the Federal Register. A notice of any changes made to the material incorporated by reference will be published in the **Federal Register**. Copies may be obtained from the Institute of Electrical and Electronics Engineers, 345 East 47th Street, New York, NY 10017. IEEE Std 803–1983 is available for inspection at the NRC's Technical Library, which is located in the Phillips Building, 7920 Norfolk Avenue, Bethesda, Maryland and at the Office of the Federal Register, 1100 L Street, NW, Washington, DC.

(G) For failures of components with multiple functions, include a list of systems or secondary functions that were also affected.

(H) For failure that rendered a train of a safety system inoperable, an estimate of the elapsed time from the discovery of the failure until the train was returned to service.

(I) The method of discovery of each component or system failure or procedural error.

(J)*(1)* Operator actions that affected the course of the event, including operator errors, procedural deficiencies, or both, that contributed to the event.

(2) For each personnel error, the licensee shall discuss:

(i) Whether the error was a cognitive error (e.g., failure to recognize the actual plant condition, failure to realize which systems should be functioning, failure to recognize the true nature of the event) or a procedural error;

(ii) Whether the error was contrary to an approved procedure, was a direct result of an error in an approved procedure, or was associated with an activity or task that was not covered by an approved procedure;

(iii) Any unusual characteristics of the work location (e.g., heat, noise) that directly contributed to the error; and

(iv) The type of personnel involved (i.e., contractor personnel, utility-licensed operator, utility nonlicensed operator, other utility personnel).

(K) Automatically and manually initiated safety system responses.

(L) The manufacturer and model number (or other identification) of each component that failed during the event.

(3) An assessment of the safety consequences and implications of the event. This assessment must include the availability of other systems or components that could have performed the same function as the components and systems that failed during the event.

(4) A description of any corrective actions planned as a result of the event, including those to reduce the probability of similar events occurring in the future.

(5) Reference to any previous similar events at the same plant that are known to the licensee.

(6) The name and telephone number of a person within the licensee's organization who is knowledgeable about the event and can provide additional information concerning the event and the plant's characteristics.

(c) *Supplemental information.* The Commission may require the licensee to submit specific additional information beyond that required by paragraph (b) of this section if the Commission finds that supplemental material is necessary for complete understanding of an unusually complex or significant event. These requests for supplemental information will be made in writing and the licensee shall submit the requested information as a supplement to the initial LER.

(d) *Submission of reports.* Licensee Event Reports must be prepared on Form NRC 366 and submitted within 30 days of discovery of a reportable event or situation to the U.S. Nuclear Regulatory Commission, Document Control Desk, Washington, D.C. 20555. The licensee shall also submit an additional copy to the appropriate NRC Regional Office listed in Appendix A to Part 73 of this chapter.

(e) *Report legibility.* The reports and copies that licensees are required to submit to the Commission under the provisions of this section must be of sufficient quality to permit legible reproduction and micrographic processing.

(f) *Exemptions.* Upon written request from a licensee including adequate justification or at the initiation of the NRC staff, the NRC Executive Director for Operations may, by a letter to the

48 FR 33850 48 FR 47823 49 FR 33850 48 FR 33850

licensee, grant exemptions to the reporting requirements under this section.

(g) *Reportable occurrences.* The requirements contained in this section replace all existing requirements for licensees to report "Reportable Occurrences" as defined in individual plant Technical Specifications.

48 FR 33850

US/IAEA SAFEGUARDS AGREEMENT

§ 50.78 Installation information and verification.

Each holder of a construction permit shall, if requested by the Commission, submit installation information on Form N–71, permit verification thereof by the International Atomic Energy Agency, and take such other action as may be necessary to implement the US/IAEA Safeguards Agreement, in the manner set forth in §§ 75.6 and 75.11 through 75.14 of this chapter.

49 FR 19623

TRANSFERS OF LICENSES—CREDITORS' RIGHTS—SURRENDER OF LICENSES

§ 50.80 Transfer of licenses.

(a) No license for a production or utilization facility, or any right thereunder, shall be transferred, assigned, or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of the license to any person, unless the Commission shall give its consent in writing.

26 FR 9546

(b) An application for transfer of a license shall include as much of the information described in §§ 50.33 and 50.34 of this part with respect to the identity and technical and financial qualifications of the proposed transferee as would be required by those sections if the application were for an initial license, and, if the license to be issued is a class 103 license, the information required by § 50.33a. The Commission may require additional information such as data respecting proposed safeguards against hazards from radioactive materials and the applicant's qualifications to protect against such hazards. The application shall include also a statement of the purposes for which the transfer of the license is requested, the nature of the transaction necessitating or making desirable the transfer of the license, and an agreement to limit access to Restricted Data pursuant to § 50.37. The Commission may require any person who submits an application for license pursuant to the provisions of this section to file a written consent from the existing licensee or a certified copy of an order or judgment of a court of competent jurisdiction attesting to the person's right (subject to the licensing requirements of the Act and these regulations) to possession of the facility involved.

38 FR 3955

(c) After appropriate notice to interested persons, including the existing licensee, and observance of such procedures as may be required by the Act or regulations or orders of the Commission, the Commission will approve an application for the transfer of a license, if the Commission determines:

(1) That the proposed transferee is qualified to be the holder of the license; and

(2) That transfer of the license is otherwise consistent with applicable provisions of law, regulations, and orders issued by the Commission pursuant thereto.

38 FR 3955

§ 50.81 Creditor regulations.

(a) Pursuant to section 184 of the Act, the Commission consents, without individual application, to the creation of any mortgage, pledge, or other lien upon any production or utilization facility not owned by the United States which is the subject of a license or upon any leasehold or other interest in such facility: *Provided:*

(1) That the rights of any creditor so secured may be exercised only in compliance with and subject to the same requirements and restrictions as would apply to the licensee pursuant to the provisions of the license, the Atomic Energy Act of 1954, as amended, and regulations issued by the Commission pursuant to said Act; and

(2) That no creditor so secured may take possession of the facility pursuant to the provisions of this section prior to either the issuance of a license from the Commission authorizing such possession or the transfer of the license.

35 FR 19655

(b) Any creditor so secured may apply for transfer of the license covering such facility by filing an application for transfer of the license pursuant to § 50.80(b). The Commission will act upon such application pursuant to § 50.80 (c).

(c) Nothing contained in this regulation shall be deemed to affect the means of acquiring, or the priority of, any tax lien or other lien provided by law.

26 FR 9546

(d) As used in this section:

(1) "License" includes any license or construction permit which may be issued by the Commission with regard to the facility;

(2) "Creditor" includes, without implied limitation, the trustee under any mortgage, pledge or lien on a facility made to secure any creditor, any trustee or receiver of the facility appointed by a court of competent jurisdiction in any action brought for the benefit of any creditor secured by such mortgage, pledge or lien, any purchaser of such facility at the sale thereof upon foreclosure of such mortgage, pledge, or lien or upon exercise of any power of sale contained therein, or any assignee of any such purchaser.

26 FR 9546

§ 50.82 Applications for termination of licenses.

(a) Any licensee may apply to the Commission for authority to surrender a license voluntarily and to dismantle the facility and dispose of its component parts. The Commission may require information, including information as to proposed procedures for the disposal of radioactive material, decontamination of the site, and other procedures, to provide reasonable assurance that the dismantling of the facility and disposal of the component parts will be performed in accordance with the regulations in this chapter and will not be inimical to the common defense and security or to the health and safety of the public.

32 FR 3090

(b) If the application demonstrates that the dismantling of the facility and disposal of the component parts will be performed in accordance with the regulations in this chapter and will not be inimical to the common defense and security or to the health and safety of the public, and after notice to interested persons, the Commission may issue an order authorizing such dismantling and disposal, and providing for the termination of the license upon completion of such procedures in accordance with any conditions specified in the order.

26 FR 9546

AMENDMENT OF LICENSE OR CONSTRUCTION PERMIT AT REQUEST OF HOLDER

§ 50.90 Application for amendment of license or construction permit.

Whenever a holder of a license or construction permit desires to amend the license or permit, application for an amendment shall be filed with the Commission, fully describing the changes desired, and following as far as applicable the form prescribed for original applications.

21 FR 355

§ 50.91 Notice for public comment; State consultation.

The Commission will use the following procedures on an application received after May 6, 1983 requesting an amendment to an operating license for a facility licensed under § 50.21(b) or § 50.22 or for a testing facility:

(a) *Notice for public comment.*—(1) At

48 FR 14873

the time a licensee requests an amendment, it must provide to the Commission its analysis, using the standards in § 50.92, about the issue of no significant hazards consideration.

(2) The Commission may publish in the Federal Register under § 2.105 either an individual notice of proposed action as to which it makes a proposed determination that no significant hazards consideration is involved, or, at least once every 30 days, a monthly notice of proposed actions which identifies each amendment issued and each amendment proposed to be issued since the last such monthly notice. For each amendment proposed to be issued, either notice will (i) contain the staff's proposed determination, under the standards in § 50.92, (ii) provide a brief description of the amendment and of the facility involved, (iii) solicit public comments on the proposed determination, and (iv) provide for a 30-day comment period. Normally, the amendment will not be granted until after this comment period expires.

(3) The Commission may inform the public about the final disposition of an amendment request where it has made a proposed determination on no significant hazards consideration either by issuing an individual notice of issuance under § 2.106 or by publishing such a notice in its monthly system of Federal Register notices. In either event, it will not make and publish a final determination on no significant hazards consideration, unless it receives a request for a hearing on that amendment request.

(4) Where the Commission makes a final determination that no significant hazards consideration is involved and that the amendment should be issued, the amendment will be effective upon issuance, even if adverse public comments have been received and even if an interested person meeting the provisions for intervention called for in § 2.714 has filed a request for a hearing. The Commission need hold any required hearing only after it issues an amendment, unless it determines that a significant hazards consideration is involved.

(5) Where the Commission finds that an emergency situation exists, in that failure to act in a timely way would result in derating or shutdown of a nuclear power plant, it may issue a license amendment involving no significant hazards consideration without prior notice and opportunity for a hearing or for public comment. In such a circumstance, the Commission will not publish a notice of proposed determination on no significant hazards consideration, but will publish a notice of issuance under § 2.106, providing for opportunity for a hearing and for public comment after issuance. The Commission expects its licensees to apply for license amendments in a timely fashion. It will decline to dispense with notice and comment on the determination of no significant hazards consideration, if it determines that the licensee has failed to make a timely application for the amendment in order to create the emergency and to take advantage of the emergency provision. Whenever a threatened closure or derating is involved, a licensee requesting an amendment must explain why this emergency situation occurred and why it could not avoid this situation, and the Commission will assess the licensee's reasons for failure to file an application sufficiently in advance of that event.

(6) Where the Commission finds that exigent circumstances exist, in that a licensee and the Commission must act quickly and that time does not permit the Commission to publish a Federal Register notice allowing 30 days for prior public comment, it will:

(i) Use local media to inform the public in the area surrounding a licensee's facility of the licensee's amendment request and of its proposed determination as described in paragraph (a)(2) of this section;

(ii) Provide for a reasonable opportunity for the public to comment, using its best efforts to make available to the public whatever means of communication it can for the public to respond quickly;

(iii) Publish a notice of issuance under § 2.106, providing an opportunity for a hearing and for public comment after issuance, if it determines that the amendment involves no significant hazards consideration.

(iv) Require an explanation from the licensee about the reason for the exigency and why the licensee cannot avoid it, and use its normal public notice and comment procedures in paragraph (a)(2) of this section where it determines that the licensee has failed to use its best efforts to make a timely application for the amendment in order to create the exigency and to take advantage of this procedure.

(b) *State consultation.*—(1) At the time a licensee requests an amendment, it must notify the State in which its facility is located of its request by providing to that State a copy of its application and its analysis about no significant hazards consideration and indicate on the application that it has done so. (The Commission will make available to the licensee the name of the appropriate State official designated to receive such amendments.)

(2) The Commission will advise the State of its proposed determination about no significant hazards consideration normally by sending it a copy of the Federal Register notice.

(3) The Commission will make available to the State official designated to consult with it about its proposed determination the names of the Project Manager or other NRC personnel it designated to consult with the State. The Commission will consider any comments of that State official. If it does not hear from the State in a timely manner, it will consider that the State has no interest in its determination; nonetheless, before it issues the amendment it will telephone that official for the purpose of consultation.

(4) The Commission will make a good faith attempt to consult with the State before it issues a license amendment involving no significant hazards consideration. If, however, it does not have time to use its normal consultation procedures because of an emergency situation, it will attempt to telephone the appropriate State official. Inability to consult with a responsible State official following good faith attempts will not prevent the Commission from making effective a license amendment involving no significant hazards consideration, if the Commission deems it necessary to avoid a shutdown or derating.

(5) After the Commission issues the requested amendment, it will send a copy of its final determination to the State.

(c) *Caveats about State consultation.* The State consultation procedures in paragraph (b) of this section do not give the State a right:

(1) To veto the Commission's proposed determination;

(2) To a hearing on the determination before the amendment becomes effective; or

(3) To insist upon a postponement of the determination or upon issuance of the amendment;

(4) Nor do these procedures alter present provisions of law that reserve to the Commission exclusive responsibility for setting and enforcing radiological health and safety requirements for nuclear power plants.

48 FR 14873

48 FR 14873

48 FR 14873

48 FR 14864

§ 50.92 Issuance of amendment.

(a) In determining whether an amendment to a license or construction permit will be issued to the applicant, the Commission will be guided by the considerations which govern the issuance of initial licenses or construction permits to the extent applicable and appropriate. If the application involves the material alteration of a licensed facility, a construction permit will be issued prior to the issuance of the amendment to the license. If the amendment involves a significant hazards consideration, the Commission will give notice of its proposed action pursuant to § 2.106 of this chapter before acting thereon. The notice will be issued as soon as

48 FR 14864

practicable after the application has been docketed.

(b) The Commission will be particularly sensitive to a license amendment request that involves irreversible consequences (such as one that, for example, permits a significant increase in the amount of effluents or radiation emitted by a nuclear power plant).

(c) The Commission may make a final determination, pursuant to the procedures in § 50.91, that a proposed amendment to an operating license for a facility licensed under § 50.21(b) or § 50.22 or for a testing facility involves no significant hazards considerations, if operation of the facility in accordance with the proposed amendment would not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated; or

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or

(3) Involve a significant reduction in a margin of safety.

REVOCATION, SUSPENSION, MODIFICATION, AMENDMENT OF LICENSES AND CONSTRUCTION PERMITS, EMERGENCY OPERATIONS BY THE COMMISSION

21 FR 355

§ 50.100 Revocation, suspension, modification of licenses and construction permits for cause.

A license or construction permit may be revoked, suspended, or modified, in whole or in part, for any material false statement in the application for license or in the supplemental or other statement of fact required of the applicant; or because of conditions revealed by the application for license or statement of fact or any report, record, inspection, or other means, which would warrant the Commission to refuse to grant a license on an original application (other than those relating to §§ 50.51, 50.42(a), and 50.43(b) of this part); or for failure to construct or operate a facility in accordance with the terms of the construction permit or license, provided that failure to make timely completion of the proposed construction or alteration of a facility under a construction permit shall be governed by the provisions of § 50.55(b); or for violation of, or failure to observe, any of the terms and provisions of the act, regulations, license, permit, or order of the Commission.

§ 50.101 Retaking possession of special nuclear material.

Upon revocation of a license, the Commission may immediately cause the retaking of possession of all special nuclear material held by the licensee.

45 FR 14199

§ 50.102 Commission order for operation after revocation.

Whenever the Commission finds that the public convenience and necessity, or the Department finds that the production program of the Department requires continued operation of a production or utilization facility, the license for which has been revoked, the Commission may, after consultation with the appropriate federal or state regulatory agency having jurisdiction, order that possession be taken of such facility and that it be operated for a period of time as, in the judgment of the Commission, the public convenience and necessity or the production program of the Department may require, or until a license for operation of the facility shall become effective. Just compensation shall be paid for the use of the facility.

21 FR 355

§ 50.103 Suspension and operation in war or national emergency.

(a) Whenever Congress declares that a state of war or national emergency exists, the Commission, if it finds it necessary to the common defense and security, may,

(1) Suspend any license it has issued.

40 FR 8774

(2) Cause the recapture of special nuclear material.

21 FR 355

(3) Order the operation of any licensed facility.

(4) Order entry into any plant or facility in order to recapture special nuclear material or to operate the facility.

(b) Just compensation shall be paid for any damages caused by recapture of special nuclear material or by operation of any facility, pursuant to this section.

35 FR 5317

BACKFITTING

§ 50.109 Backfitting.

(a) The Commission may, in accordance with the procedures specified in this chapter, require the backfitting of a facility if it finds that such action will provide substantial, additional protection which is required for the public health and safety or the common defense and security. As used in this section, "backfitting" of a production or utilization facility means the addition, elimination or modification of structures, systems or components of the facility after the construction permit has been issued.

(b) Nothing in this section shall be deemed to relieve a holder of a construction permit or a license from compliance with the rules, regulations, or orders of the Commission.

(c) The Commission may at any time require a holder of a construction permit or a license to submit such information concerning the addition or proposed addition, the elimination or proposed elimination, or the modification or proposed modification of structures, systems or components of a facility as it deems appropriate.

42 FR 25721

ENFORCEMENT

§ 50.110 Violations.

An injunction or other court order may be obtained prohibiting any violation of any provision of the Atomic Energy Act of 1954, as amended, or Title II of the Energy Reorganization Act of 1974, or any regulation or order issued thereunder. A court order may be obtained for the payment of a civil penalty imposed pursuant to section 234 of the Act for violation of section 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, or 109 of the Act, or section 206 of the Energy Reorganization Act of 1974, or any rule, regulation, or order issued thereunder, or any term, condition, or limitation of any license issued thereunder, or for any violation for which a license may be revoked under section 186 of the Act. Any person who willfully violates any provision of the Act or any regulation or order issued thereunder may be guilty of a crime and, upon conviction, may be punished by fine or imprisonment or both, as provided by law.

PART 50 • DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

APPENDICES

APPENDIX A—GENERAL DESIGN CRITERIA FOR NUCLEAR POWER PLANTS

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INTRODUCTION

Pursuant to the provisions of § 50.34, an application for a construction permit must include the principal design criteria for a proposed facility. The principal design criteria establish the necessary design, fabrication, construction, testing, and performance requirements for structures, systems, and components important to safety; that is, structures, systems, and components that provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public.

These General Design Criteria establish minimum requirements for the principal design criteria for water-cooled nuclear power plants similar in design and location to plants for which construction permits have been issued by the Commission. The General Design Criteria are also considered to be generally applicable to other types of nuclear power units and are intended to provide guidance in establishing the principal design criteria for such other units.

The development of these General Design Criteria is not yet complete. For example, some of the definitions need further amplification. Also, some of the specific design requirements for structures, systems, and components important to safety have not as yet been suitably defined. Their omission does not relieve any applicant from considering these matters in the design of a specific facility and satisfying the necessary safety requirements. These matters include:

(1) Consideration of the need to design against single failures of passive components in fluid systems important to safety. (See Definition of Single Failure.)

(2) Consideration of redundancy and diversity requirements for fluid systems important to safety. A "system" could consist of a number of subsystems each of which is separately capable of performing the specified system safety function. The minimum acceptable redundancy and diversity of subsystems and components within a subsystem, and the required interconnection and independence of the subsystems have not yet been developed or defined. (See Criteria 34, 35, 38, 41, and 44.)

(3) Consideration of the type, size, and orientation of possible breaks in components of the reactor coolant pressure boundary in determining design requirements to suitably protect against postulated loss-of-coolant accidents. (See Definition of Loss of Coolant Accidents.)

(4) Consideration of the possibility of systematic, nonrandom, concurrent failures of redundant elements in the design of protection systems and reactivity control systems. (See Criteria 22, 24, 26, and 29.)

It is expected that the criteria will be augmented and changed from time to time as important new requirements for these and other features are developed.

There will be some water-cooled nuclear power plants for which the General Design Criteria are not sufficient and for which additional criteria must be identified and satisfied in the interest of public safety. In particular, it is expected that additional or different criteria will be needed to take into account unusual sites and environmental conditions, and for water-cooled nuclear power units of advanced design. Also, there may be water-cooled nuclear power units for which fulfillment of some of the General Design Criteria may not be necessary or appropriate. For plants such as these, departures from the General Design Criteria must be identified and justified.

DEFINITIONS AND EXPLANATIONS

Nuclear power unit. A nuclear power unit means a nuclear power reactor and associated equipment necessary for electric power generation and includes those structures, systems, and components required to provide reasonable assurance the facility can be operated without undue risk to the health and safety of the public.

Loss of coolant accidents. Loss of coolant accidents mean those postulated accidents that result from the loss of reactor coolant at a rate in excess of the capability of the reactor coolant makeup system from breaks in the reactor coolant pressure boundary, up to and including a break equivalent in size to the double-ended rupture of the largest pipe of the reactor coolant system.[1]

Single failure. A single failure means an occurrence which results in the loss of capability of a component to perform its intended safety functions. Multiple failures resulting from a single occurrence are considered to be a single failure. Fluid and electric systems are considered to be designed against an assumed single failure if neither (1) a single failure of any active component (assuming passive components function properly) nor (2) a single failure of a passive component (assuming active components function properly), results in a loss of the capability of the system to perform its safety functions.[2]

Anticipated operational occurrences. Anticipated operational occurrences mean those conditions of normal operation which are expected to occur one or more times during the life of the nuclear power unit and include but are not limited to loss of power to all recirculation pumps, tripping of the turbine generator set, isolation of the main condenser, and loss of all offsite power.

CRITERIA

I. Overall Requirements

Criterion 1—Quality standards and records. Structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety functions to be performed. Where generally recognized codes and standards are used, they shall be identified and evaluated to determine their applicability, adequacy, and sufficiency and shall be supplemented or modified as necessary to assure a quality product in keeping with the required safety function. A quality assurance program shall be established and implemented in order to provide adequate assurance that these structures, systems, and components will satisfactorily perform their safety functions. Appropriate records of the design, fabrication, erection, and testing of structures, systems, and components important to safety shall be maintained by or under the control of the nuclear power unit licensee throughout the life of the unit.

[1] Further details relating to the type, size, and orientation of postulated breaks in specific components of the reactor coolant pressure boundary are under development.

[2] Single failures of passive components in electric systems should be assumed in designing against a single failure. The conditions under which a single failure of a passive component in a fluid system should be considered in designing the system against a single failure are under development.

Criterion 2—Design bases for protection against natural phenomena. Structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions. The design bases for these structures, systems, and components shall reflect: (1) Appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated, (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena, and (3) the importance of the safety functions to be performed. 36 FR 3255

Criterion 3—Fire protection. Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. Noncombustible and heat resistant materials shall be used wherever practical throughout the unit, particularly in locations such as the containment and control room. Fire detection and fighting systems of appropriate capacity and capability shall be provided and designed to minimize the adverse effects of fires on structures, systems, and components important to safety. Firefighting systems shall be designed to assure that their rupture or inadvertent operation does not significantly impair the safety capability of these structures, systems, and components.

Criterion 4—Environmental and missile design bases. Structures, systems, and components important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents. These structures, systems, and components shall be appropriately protected against dynamic effects, including the effects of missiles, pipe whipping, and discharging fluids, that may result from equipment failures and from events and conditions outside the nuclear power unit.

Criterion 5—Sharing of structures, systems, and components. Structures, systems, and components important to safety shall not be shared among nuclear power units unless it can be shown that such sharing will not significantly impair their ability to perform their safety functions, including, in the event of an accident in one unit, an orderly shutdown and cooldown of the remaining units. 36 FR 12733

II. Protection by Multiple Fission Product Barriers

Criterion 10—Reactor design. The reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences. 36 FR 3255

Criterion 11—Reactor inherent protection. The reactor core and associated coolant systems shall be designed so that in the power operating range the net effect of the prompt inherent nuclear feedback characteristics tends to compensate for a rapid increase in reactivity.

Criterion 12—Suppression of reactor power oscillations. The reactor core and associated coolant, control, and protection systems shall be designed to assure that power oscillations which can result in conditions exceeding specified acceptable fuel design limits are not possible or can be reliably and readily detected and suppressed.

Criterion 13—Instrumentation and control. Instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges. 36 FR 12733

Criterion 14—Reactor coolant pressure boundary. The reactor coolant pressure boundary shall be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture.

Criterion 15—Reactor coolant system design. The reactor coolant system and associated auxiliary, control, and protection systems shall be designed with sufficient margin to assure that the design conditions of the reactor coolant pressure boundary are not exceeded during any condition of normal operation, including anticipated operational occurrences. 36 FR 3255

Criterion 16—Containment design. Reactor containment and associated systems shall be provided to establish an essentially leaktight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as postulated accident conditions require.

Criterion 17—Electric power systems. An onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.

The onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

Electric power from the transmission network to the onsite electric distribution system shall be supplied by two physically independent circuits (not necessarily on separate rights of way) designed and located so as to minimize to the extent practical the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. A switchyard common to both circuits is acceptable. Each of these circuits shall be designed to be available in sufficient time following a loss of all onsite alternating current power supplies and the other offsite electric power circuit, to assure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded. One of these circuits shall be designed to be available within a few seconds following a loss-of-coolant accident to assure that core cooling, containment integrity, and other vital safety functions are maintained. 36 FR 12733

Provisions shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the onsite electric power supplies.

Criterion 18—Inspection and testing of electrical power systems. Electric power systems important to safety shall be designed to permit appropriate periodic inspection and testing of important areas and features, such as wiring, insulation, connections, and switchboards, to assess the continuity of the systems and the condition of their components. The systems shall be designed with a capability to test periodically (1) the operability and functional performance of the components of the systems, such as onsite power sources, relays, switches, and buses, and (2) the operability of the systems as a whole and, under conditions as close to design as practical, the full operation sequence that brings the systems into operation, including operation of applicable portions of the protection system, and the transfer of power among the nuclear power unit, the offsite power system, and the onsite power system. 36 FR 3255

Criterion 19—Control room. A control room shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident.

Equipment at appropriate locations outside the control room shall be provided (1) with a design capability for prompt hot shutdown of the reactor, including necessary instrumentation and controls to maintain the unit in a safe condition during hot shutdown, and (2) with a potential capability for subsequent cold shutdown of the reactor through the use of suitable procedures.

III. Protection and Reactivity Control Systems

Criterion 20—Protection system functions. The protection system shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

Criterion 21—Protection system reliability and testability. The protection system shall be designed for high functional reliability and inservice testability commensurate with the safety functions to be performed. Redundancy and independence designed into the protection system shall be sufficient to assure that (1) no single failure results in loss of the protection function and (2) removal from service of any component or channel does not result in loss of the required minimum redundancy unless the acceptable reliability of operation of the protection system can be otherwise demonstrated. The protection system shall be designed to permit periodic testing of its functioning when the reactor is in operation, including a capability to test channels independently to determine failures and losses of redundancy that may have occurred.

Criterion 22—Protection system independence. The protection system shall be designed to assure that the effects of natural phenomena, and of normal operating, maintenance, testing, and postulated accident conditions on redundant channels do not result in loss of the protection function, or shall be demonstrated to be acceptable on some other defined basis. Design techniques, such as functional diversity or diversity in

component design and principles of operation, shall be used to the extent practical to prevent loss of the protection function.

Criterion 23—Protection system failure modes. The protection system shall be designed to fail into a safe state or into a state demonstrated to be acceptable on some other defined basis if conditions such as disconnection of the system, loss of energy (e.g., electric power, instrument air), or postulated adverse environments (e.g., extreme heat or cold, fire, pressure steam, water, and radiation) are experienced.

Criterion 24—Separation of protection and control systems. The protection system shall be separated from control systems to the extent that failure of any single control system component or channel, or failure or removal from service of any single protection system component or channel which is common to the control and protection systems leaves intact a system satisfying all reliability, redundancy, and independence requirements of the protection system. Interconnection of the protection and control systems shall be limited so as to assure that safety is not significantly impaired.

Criterion 25—Protection system requirements for reactivity control malfunctions. The protection system shall be designed to assure that specified acceptable fuel design limits are not exceeded for any single malfunction of the reactivity control systems, such as accidental withdrawal (not ejection or dropout) of control rods.

Criterion 26—Reactivity control system redundancy and capability. Two independent reactivity control systems of different design principles shall be provided. One of the systems shall use control rods, preferably including a positive means for inserting the rods, and shall be capable of reliably controlling reactivity changes to assure that under conditions of normal operation, including anticipated operational occurrences, and with appropriate margin for malfunctions such as stuck rods, specified acceptable fuel design limits are not exceeded. The second reactivity control system shall be capable of reliably controlling the rate of reactivity changes resulting from planned, normal power changes (including xenon burnout) to assure acceptable fuel design limits are not exceeded. One of the systems shall be capable of holding the reactor core subcritical under cold conditions.

Criterion 27—Combined reactivity control systems capability. The reactivity control systems shall be designed to have a combined capability, in conjunction with poison addition by the emergency core cooling system, of reliably controlling reactivity changes to assure that under postulated accident conditions and with appropriate margin for stuck rods the capability to cool the core is maintained.

Criterion 28—Reactivity limits. The reactivity control systems shall be designed with appropriate limits on the potential amount and rate of reactivity increase to assure that the effects of postulated reactivity accidents can neither (1) result in damage to the reactor coolant pressure boundary greater than limited local yielding nor (2) sufficiently disturb the core, its support structures or other reactor pressure vessel internals to impair significantly the capability to cool the core. These postulated reactivity accidents shall include consideration of rod ejection (unless prevented by positive means), rod dropout, steam line rupture, changes in reactor coolant temperature and pressure, and cold water addition.

Criterion 29—Protection against anticipated operational occurrences. The protection and reactivity control systems shall be designed to assure an extremely high probability of accomplishing their safety functions in the event of anticipated operational occurrences.

IV. Fluid Systems

Criterion 30—Quality of reactor coolant pressure boundary. Components which are part of the reactor coolant pressure boundary shall be designed, fabricated, erected, and tested to the highest quality standards practical. Means shall be provided for detecting and, to the extent practical, identifying the location of the source of reactor coolant leakage.

Criterion 31—Fracture prevention of reactor coolant pressure boundary. The reactor coolant pressure boundary shall be designed with sufficient margin to assure that when stressed under operating, maintenance, testing, and postulated accident conditions (1) the boundary behaves in a nonbrittle manner and (2) the probability of rapidly propagating fracture is minimized. The design shall reflect consideration of service temperatures and other conditions of the boundary material under operating, maintenance, testing, and postulated accident conditions and the uncertainties in determining (1) material properties, (2) the effects of irradiation on material properties, (3) residual, steady-state and transient stresses, and (4) size of flaws.

Criterion 32—Inspection of reactor coolant pressure boundary. Components which are part of the reactor coolant pressure boundary shall be designed to permit (1) periodic inspection and testing of important areas and features to assess their structural and leaktight integrity, and (2) an appropriate material surveillance program for the reactor pressure vessel.

Criterion 33—Reactor coolant makeup. A system to supply reactor coolant makeup for protection against small breaks in the reactor coolant pressure boundary shall be provided. The system safety function shall be to assure that specified acceptable fuel design limits are not exceeded as a result of reactor coolant loss due to leakage from the reactor coolant pressure boundary and rupture of small piping or other small components which are part of the boundary. The system shall be designed to assure that for onsite electric power system operation (assuming offsite power is not available) and for offsite electric power system operation (assuming onsite power is not available) the system safety function can be accomplished using the piping, pumps, and valves used to maintain coolant inventory during normal reactor operation.

Criterion 34—Residual heat removal. A system to remove residual heat shall be provided. The system safety function shall be to transfer fission product decay heat and other residual heat from the reactor core at a rate such that specified acceptable fuel design limits and the design conditions of the reactor coolant pressure boundary are not exceeded.

Suitable redundancy in components and features, and suitable interconnections, leak detection, and isolation capabilities shall be provided to assure that for onsite electric power system operation (assuming offsite power is not available) and for offsite electric power system operation (assuming onsite power is not available) the system safety function can be accomplished, assuming a single failure.

Criterion 35—Emergency core cooling. A system to provide abundant emergency core cooling shall be provided. The system safety function shall be to transfer heat from the reactor core following any loss of reactor coolant at a rate such that (1) fuel and clad damage that could interfere with continued effective core cooling is prevented, and (2) clad metal-water reaction is limited to negligible amounts.

Suitable redundancy in components and features, and suitable interconnections, leak detection, isolation, and containment capabilities shall be provided to assure that for onsite electric power system operation (assuming offsite power is not available) and for offsite electric power system operation (assuming onsite power is not available) the system safety function can be accomplished, assuming a single failure.

Criterion 36—Inspection of emergency core cooling system. The emergency core cooling system shall be designed to permit appropriate periodic inspection of important components, such as spray rings in the reactor pressure vessel, water injection nozzles, and piping, to assure the integrity and capability of the system.

Criterion 37—Testing of emergency core cooling system. The emergency core cooling system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight integrity of its components, (2) the operability and performance of the active components of the system, and (3) the operability of the system as a whole and, under conditions as close to design as practical, the performance of the full operational sequence that brings the system into operation, including operation of applicable portions of the protection system, the transfer between normal and emergency power sources, and the operation of the associated cooling water system.

Criterion 38—Containment heat removal. A system to remove heat from the reactor containment shall be provided. The system safety function shall be to reduce rapidly, consistent with the functioning of other associated systems, the containment pressure and temperature following any loss-of-coolant accident and maintain them at acceptably low levels.

Suitable redundancy in components and features, and suitable interconnections, leak detection, isolation, and containment capabilities shall be provided to assure that for onsite electric power system operation (assuming offsite power is not available) and for offsite electric power system operation (assuming onsite power is not available) the system safety function can be accomplished, assuming a single failure.

Criterion 39—Inspection of containment heat removal system. The containment heat removal system shall be designed to permit appropriate periodic inspection of important components, such as the torus, sumps, spray nozzles, and piping to assure the integrity and capability of the system.

Criterion 40—Testing of containment heat removal system. The containment heat removal system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight integrity of its components, (2) the operability and performance of the active components of the system, and (3) the operability of the system as a whole, and, under conditions as close to the design as practical, the performance of the full operational sequence that brings the system into operation, including operation of applicable portions of the protection system, the transfer between normal and emergency power sources, and the operation of the associated cooling water system.

Criterion 41—Containment atmosphere cleanup. Systems to control fission products, hydrogen, oxygen, and other substances which may be released into the reactor containment shall be provided as necessary to reduce, consistent with the functioning of other associated systems, the concentration and quality of fission products released to the environment following postulated accidents, and to control the concentration of hydrogen or oxygen and other substances in the containment atmosphere following postulated accidents to assure that containment integrity is maintained.

Each system shall have suitable redundancy in components and features, and suitable interconnections, leak detection, isolation, and containment capabilities to assure

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that for onsite electric power system operation (assuming offsite power is not available) and for offsite electric power system operation (assuming onsite power is not available) its safety function can be accomplished, assuming a single failure.

Criterion 42—Inspection of containment atmosphere cleanup systems. The containment atmosphere cleanup systems shall be designed to permit appropriate periodic inspection of important components, such as filter frames, ducts, and piping to assure the integrity and capability of the systems.

Criterion 43—Testing of containment atmosphere cleanup systems. The containment atmosphere cleanup systems shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight integrity of its components, (2) the operability and performance of the active components of the systems such as fans, filters, dampers, pumps, and valves, and (3) the operability of the systems as a whole and, under conditions as close to design as practical, the performance of the full operational sequence that brings the systems into operation, including operation of applicable portions of the protection system, the transfer between normal and emergency power sources, and the operation of associated systems.

Criterion 44—Cooling water. A system to transfer heat from structures, systems, and components important to safety, to an ultimate heat sink shall be provided. The system safety function shall be to transfer the combined heat load of these structures, systems, and components under normal operating and accident conditions.

Suitable redundancy in components and features, and suitable interconnections, leak detection, and isolation capabilities shall be provided to assure that for onsite electric power system operation (assuming offsite power is not available) and for offsite electric power system operation (assuming onsite power is not available) the system safety function can be accomplished, assuming a single failure.

Criterion 45—Inspection of cooling water system. The cooling water system shall be designed to permit appropriate periodic inspection of important components, such as heat exchangers and piping, to assure the integrity and capability of the system.

Criterion 46—Testing of cooling water system. The cooling water system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight integrity of its components, (2) the operability and the performance of the active components of the system, and (3) the operability of the system as a whole and, under conditions as close to design as practical, the performance of the full operational sequence that brings the system into operation for reactor shutdown and for loss-of-coolant accidents, including operation of applicable portions of the protection system and the transfer between normal and emergency power sources.

V. Reactor Containment

CRITERION 50—CONTAINMENT DESIGN BASIS

The reactor containment structure, including access openings, penetrations, and the containment heat removal system, shall be designed so that the containment structure and its internal compartments can accommodate, without exceeding the design leakage rate and with sufficient margin, the calculated pressure and temperature conditions resulting from any loss-of-coolant accident. This margin shall reflect consideration of (1) the effects of potential energy sources that have not been included in the determination of the peak conditions, such as energy in steam generators and, as required by § 50.44, energy from metal-water and other chemical reactions that may result from degradation, but not total failure, of emergency core cooling functioning; (2) the limited experience and experimental data available for defining accident phenomena and containment responses; and (3) the conservatism of the calculational model and input parameters.

Criterion 51—Fracture prevention of containment pressure boundary. The reactor containment boundary shall be designed with sufficient margin to assure that under operating, maintenance, testing, and postulated accident conditions (1) its ferritic materials behave in a nonbrittle manner and (2) the probability of rapidly propagating fracture is minimized. The design shall reflect consideration of service temperatures and other conditions of the containment boundary material during operation, maintenance, testing, and postulated accident conditions, and the uncertainties in determining (1) material properties, (2) residual, steady-state, and transient stresses, and (3) size of flaws.

Criterion 52—Capability for containment leakage rate testing. The reactor containment and other equipment which may be subjected to containment test conditions shall be designed so that periodic integrated leakage rate testing can be conducted at containment design pressure.

Criterion 53—Provisions for containment testing and inspection. The reactor containment shall be designed to permit (1) appropriate periodic inspection of all important areas, such as penetrations, (2) an appropriate surveillance program, and (3) periodic testing at containment design pressure of the leaktightness of penetrations which have resilient seals and expansion bellows.

Criterion 54—Piping systems penetrating containment. Piping systems penetrating primary reactor containment shall be provided with leak detection, isolation, and containment capabilities having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these piping systems. Such piping systems shall be designed with a capability to test periodically the operability of the isolation valves and associated apparatus and to determine if valve leakage is within acceptable limits.

Criterion 55—Reactor coolant pressure boundary penetrating containment. Each line that is part of the reactor coolant pressure boundary and that penetrates primary reactor containment shall be provided with containment isolation valves as follows, unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:

(1) One locked closed isolation valve inside and one locked closed isolation valve outside containment; or

(2) One automatic isolation valve inside and one locked closed isolation valve outside containment; or

(3) One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or

(4) One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment.

Isolation valves outside containment shall be located as close to containment as practical and upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety.

Other appropriate requirements to minimize the probability or consequences of an accidental rupture of these lines or of lines connected to them shall be provided as necessary to assure adequate safety. Determination of the appropriateness of these requirements, such as higher quality in design, fabrication, and testing, additional provisions for inservice inspection, protection against more severe natural phenomena, and additional isolation valves and containment, shall include consideration of the population density, use characteristics, and physical characteristics of the site environs.

Criterion 56—Primary containment isolation. Each line that connects directly to the containment atmosphere and penetrates primary reactor containment shall be provided with containment isolation valves as follows, unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:

(1) One locked closed isolation valve inside and one locked closed isolation valve outside containment; or

(2) One automatic isolation valve inside and one locked closed isolation valve outside containment; or

(3) One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or

(4) One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment.

Isolation valves outside containment shall be located as close to the containment as practical and upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety.

Criterion 57—Closed system isolation valves. Each line that penetrates primary reactor containment and is neither part of the reactor coolant pressure boundary nor connected directly to the containment atmosphere shall have at least one containment isolation valve which shall be either automatic, or locked closed, or capable of remote manual operation. This valve shall be outside containment and located as close to the containment as practical. A simple check valve may not be used as the automatic isolation valve.

VI. Fuel and Radioactivity Control

Criterion 60—Control of releases of radioactive materials to the environment. The nuclear power unit design shall include means to control suitably the release of radioactive materials in gaseous and liquid effluents and to handle radioactive solid wastes produced during normal reactor operation, including anticipated operational occurrences. Sufficient holdup capacity shall be provided for retention of gaseous and liquid effluents containing radioactive materials, particularly where unfavorable site environmental conditions can be expected to impose unusual operational limitations upon the release of such effluents to the environment.

Criterion 61—Fuel storage and handling and radioactivity control. The fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated accident conditions. These systems shall be designed (1) with a capability to permit appropriate periodic inspection and testing of components important to safety, (2) with suitable shielding for radiation protection, (3) with appropriate containment, confinement, and filtering systems, (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel

storage coolant inventory under accident conditions.

Criterion 62—Prevention of criticality in fuel storage and handling. Criticality in the fuel storage and handling system shall be prevented by physical systems or processes, preferably by use of geometrically safe configurations.

Criterion 63—Monitoring fuel and waste storage. Appropriate systems shall be provided in fuel storage and radioactive waste systems and associated handling areas (1) to detect conditions that may result in loss of residual heat removal capability and excessive radiation levels and (2) to initiate appropriate safety actions.

Criterion 64—Monitoring radioactivity releases. Means shall be provided for monitoring the reactor containment atmosphere, spaces containing components for recirculation of loss-of-coolant accident fluids, effluent discharge paths, and the plant environs for radioactivity that may be released from normal operations, including anticipated operational occurrences, and from postulated accidents.

36 F R 3255

APPENDIX B—QUALITY ASSURANCE CRITERIA FOR NUCLEAR POWER PLANTS AND FUEL REPROCESSING PLANTS

35 F R 10498

Introduction. Every applicant for a construction permit is required by the provisions of § 50.34 to include in its preliminary safety analysis report a description of the quality assurance program to be applied to the design, fabrication, construction, and testing of the structures, systems, and components of the facility. Every applicant for an operating license is required to include, in its final safety analysis report, information pertaining to the managerial and administrative controls to be used to assure safe operation.

Nuclear powerplants and fuel reprocessing plants* include structures, systems, and components that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. This appendix establishes quality assurance requirements for the design, construction, and operation of those structures, systems, and components. The pertinent requirements of this appendix apply to all activities affecting the safety-related functions of those structures, systems, and components; these activities include designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, testing, operating, maintaining, repairing, refueling, and modifying.

As used in this appendix, "quality assurance" comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service. Quality assurance includes quality control, which comprises those quality assurance actions related to the physical characteristics of a material, structure, component, or system which provide a means to control the quality of the material, structure, component, or system to predetermined requirements.

40 F R 32100

I. Organization

The applicant [1] shall be responsible for the establishment and execution of the quality assurance program. The applicant may delegate to others, such as contractors, agents, or consultants, the work of establishing and executing the quality assurance program, or any part thereof, but shall retain responsibility therefor. The authority and duties of persons and organizations performing activities affecting the safety-related functions of structures, systems and components shall be clearly established and delineated in writing. These activities include both the performing functions of attaining quality objectives and the quality assurance functions. The quality assurance functions are those of (a) assuring that an appropriate quality assurance program is established and effectively executed and (b) verifying, such as by checking, auditing, and inspection, that activities affecting the safety-related functions have been correctly performed. The persons and organizations performing quality assurance functions shall have sufficient authority and organizational freedom to identify quality problems; to initiate, recommend, or provide solutions; and to verify implementation of solutions. Such persons and organizations performing quality assurance functions shall report to a management level such that this required authority and organizational freedom, including sufficient independence from cost and schedule when opposed to safety considerations, are provided. Because of the many variables involved, such as the number of personnel, the type of activity being performed, and the location or locations where activities are performed, the organizational structure for executing the quality assurance program may take various forms provided that the persons and organizations assigned the quality assurance functions have this required authority and organizational freedom. Irrespective of the organizational structure, the individual(s) assigned the responsibility for assuring effective execution of any portion of the quality assurance program at any location where activities subject to this Appendix are being performed shall have direct access to such levels of management as may be necessary to perform this function.

40 F R 32100

35 F R 10498

II. Quality Assurance Program

The applicant shall establish at the earliest practicable time, consistent with the schedule for accomplishing the activities, a quality assurance program which complies with the requirements of this appendix. This program shall be documented by written policies, procedures, or instructions and shall be carried out throughout plant life in accordance with those policies, procedures, or instructions. The applicant shall identify the structures, systems, and components to be covered by the quality assurance program and the major organizations participating in the program, together with the designated functions of these organizations. The quality assurance program shall provide control over activities affecting the quality of the identified structures, systems, and components, to an extent consistent with their importance to safety. Activities affecting quality shall be accomplished under suitably controlled conditions. Controlled conditions include the use of appropriate equipment; suitable environmental conditions for accomplishing the activity, such as adequate cleanness; and assurance that all prerequisites for the given activity have been satisfied. The program shall take into account the need for special controls, processes, test equipment, tools, and skills to attain the required quality, and the need for verification of quality by inspection and test. The program shall provide for indoctrination and training of personnel performing activities affecting quality as necessary to assure that suitable proficiency is achieved and maintained. The applicant shall regularly review the status and adequacy of the quality assurance program. Management of other organizations participating in the quality assurance program shall regularly review the status and adequacy of that part of the quality assurance program which they are executing.

III. Design Control

Measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in § 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. Measures shall also be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components.

Measures shall be established for the identification and control of design interfaces and for coordination among participat-

[1] While the term "applicant" is used in these criteria, the requirements are, of course, applicable after such a person has received a license to construct and operate a nuclear power plant or a fuel reprocessing plant. These criteria will also be used for guidance in evaluating the adequacy of quality assurance programs in use by holders of construction permits and operating licenses.

*Amended 36 FR 18301.

ing design organizations. These measures shall include the establishment of procedures among participating design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces.

The design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. The verifying or checking process shall be performed by individuals or groups other than those who performed the original design, but who may be from the same organization. Where a test program is used to verify the adequacy of a specific design feature in lieu of other verifying or checking processes, it shall include suitable qualification testing of a prototype unit under the most adverse design conditions. Design control measures shall be applied to items such as the following: reactor physics, stress, thermal, hydraulic, and accident analyses; compatibility of materials; accessibility for inservice inspection, maintenance, and repair; and delineation of acceptance criteria for inspections and tests.

Design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design unless the applicant designates another responsible organization.

IV. PROCUREMENT DOCUMENT CONTROL

Measures shall be established to assure that applicable regulatory requirements, design bases, and other requirements which are necessary to assure adequate quality are suitably included or referenced in the documents for procurement of material, equipment, and services, whether purchased by the applicant or by its contractors or subcontractors. To the extent necessary, procurement documents shall require contractors or subcontractors to provide a quality assurance program consistent with the pertinent provisions of this appendix.

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V. INSTRUCTIONS, PROCEDURES, AND DRAWINGS

Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, or a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

VI. DOCUMENT CONTROL

Measures shall be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality. These measures shall assure that documents, including changes, are reviewed for adequacy and approved for release by authorized personnel and are distributed to and used at the location where the prescribed activity is performed. Changes to documents shall be reviewed and approved by the same organizations that performed the original review and approval unless the applicant designates another responsible organization.

VII. CONTROL OF PURCHASED MATERIAL, EQUIPMENT, AND SERVICES

Measures shall be established to assure that purchased material, equipment, and services, whether purchased directly or through contractors and subcontractors, conform to the procurement documents. These measures shall include provisions, as appropriate, for source evaluation and selection, objective evidence of quality furnished by the contractor or subcontractor, inspection at the contractor or subcontractor source, and examination of products upon delivery. Documentary evidence that material and equipment conform to the procurement requirements shall be available at the nuclear powerplant or fuel reprocessing plant* site prior to installation or use of such material and equipment. This documentary evidence shall be retained at the nuclear powerplant or fuel reprocessing plant* site and shall be sufficient to identify the specific requirements, such as codes, standards, or specifications, met by the purchased material and equipment. The effectiveness of the control of quality by contractors and subcontractors shall be assessed by the applicant or designee at intervals consistent with the importance, complexity, and quantity of the product or services.

VIII. IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS

Measures shall be established for the identification and control of materials, parts, and components, including partially fabricated assemblies. These measures shall assure that identification of the item is maintained by heat number, part number, serial number, or other appropriate means, either on the item or on records traceable to the item, as required throughout fabrication, erection, installation, and use of the item. These identification and control measures shall be designed to prevent the use of incorrect or defective material, parts, and components.

IX. CONTROL OF SPECIAL PROCESSES

Measures shall be established to assure that special processes, including welding, heat treating, and nondestructive testing, are controlled and accomplished by qualified personnel using qualified procedures in accordance with applicable codes, standards, specifications, criteria, and other special requirements.

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X. INSPECTION

A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity. Such inspection shall be performed by individuals other than those who performed the activity being inspected. Examinations, measurements, or tests of material or products processed shall be performed for each work operation where necessary to assure quality. If inspection of processed material or products is impossible or disadvantageous, indirect control by monitoring processing methods, equipment, and personnel shall be provided. Both inspection and process monitoring shall be provided when control is inadequate without both. If mandatory inspection hold points, which require witnessing or inspecting by the applicant's designated representative and beyond which work shall not proceed without the consent of its designated representative are required, the specific hold points shall be indicated in appropriate documents.

XI. TEST CONTROL

A test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. The test program shall include, as appropriate, proof tests prior to installation, preoperational tests, and operational tests during nuclear powerplant or fuel reprocessing plant* operation, of structures, systems, and components. Test procedures shall include provisions for assuring that all prerequisites for the given test have been met, that adequate test instrumentation is available and used, and that the test is performed under suitable environmental conditions. Test results shall be documented and evaluated to assure that test requirements have been satisfied.

XII. CONTROL OF MEASURING AND TEST EQUIPMENT

Measures shall be established to assure that tools, gages, instruments, and other measuring and testing devices used in activities affecting quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits.

XIII. HANDLING, STORAGE, AND SHIPPING

Measures shall be established to control the handling, storage, shipping, cleaning, and preservation of material and equipment in accordance with work and inspection instructions to prevent damage or deterioration. When necessary for particular products, special protective environments, such as inert gas atmosphere, specific moisture content levels, and temperature levels, shall be specified and provided.

XIV. INSPECTION, TEST, AND OPERATING STATUS

Measures shall be established to indicate, by the use of markings such as stamps, tags, labels, routing cards, or other suitable means, the status of inspections and tests performed upon individual items of the nuclear powerplant or fuel reprocessing plant.* These measures shall provide for the identification of items which have satisfactorily passed required inspections and tests, where necessary to preclude inadvertent bypassing of such inspections and tests. Measures shall also be established for indicating the operating status of structures, systems, and components of the nuclear powerplant or fuel reprocessing plant,* such as by tagging valves and switches, to prevent inadvertent operation.

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XV. NONCONFORMING MATERIALS, PARTS, OR COMPONENTS

Measures shall be established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use or installation. These measures shall include, as appropriate, procedures for identification, documentation, segregation, disposition, and notification to affected organizations. Nonconforming items shall be reviewed and accepted, rejected, repaired, or reworked in accordance with documented procedures.

XVI. CORRECTIVE ACTION

Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. The identification of the significant condition adverse to quality, the cause of the condition, and the corrective action taken shall be documented and reported to appropriate levels of management.

XVII. QUALITY ASSURANCE RECORDS

Sufficient records shall be maintained to furnish evidence of activities affecting quality. The records shall include at least the following: Operating logs and the results of reviews, inspections, tests, audits, monitoring of work performance, and materials analyses. The records shall also include closely-related data such as qualifications of personnel, procedures, and equipment. Inspection and test records shall, as a mini-

*Amended 36 FR 18301.

mum, identify the inspector or data recorder, the type of observation, the results, the acceptability, and the action taken in connection with any deficiencies noted. Records shall be identifiable and retrievable. Consistent with applicable regulatory requirements, the applicant shall establish requirements concerning record retention, such as duration, location, and assigned responsibility.

XVIII. AUDITS

A comprehensive system of planned and periodic audits shall be carried out to verify compliance with all aspects of the quality assurance program and to determine the effectiveness of the program. The audits shall be performed in accordance with the written procedures or check lists by appropriately trained personnel not having direct responsibilities in the areas being audited. Audit results shall be documented and reviewed by management having responsibility in the area audited. Followup action, including reaudit of deficient areas, shall be taken where indicated.

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Appendix C—A Guide for the Financial Data and Related Information Required To Establish Financial Qualifications for Facility Construction Permits

General Information

This appendix is intended to apprise applicants for licenses to construct production or utilization facilities of the types described in § 50.21(b) or § 50.22, or testing facilities, of the general kinds of financial data and other related information that will demonstrate the financial qualification of the applicant to carry out the activities for which the permit is sought. The kind and depth of information described in this guide is not intended to be a rigid and absolute requirement. In some instances, additional pertinent material may be needed. In any case, the applicant should include information other than that specified, if such information is pertinent to establishing the applicant's financial ability to construct the proposed facility.

It is important to observe also that both § 50.33(f) and this appendix distinguish between applicants which are established organizations and those which are newly-formed entities organized primarily for the purpose of engaging in the activity for which the permit is sought. Those in the former category will normally have a history of operating experience and be able to submit financial statements reflecting the financial results of past operations. With respect, however, to the applicant which is a newly formed company established primarily for the purpose of carrying out the licensed activity, with little or no prior operating history, somewhat more detailed data and supporting documentation will generally be necessary. For this reason, the appendix describes separately the scope of information to be included in applications by each of these two classes of applicants.

In determining an applicant's financial qualification, the Commission will require the minimum amount of information necessary for that purpose. No special forms are prescribed for submitting the information. In many cases, the financial information usually contained in current annual financial reports, including summary data of prior years, will be sufficient for the Commission's needs. The Commission reserves the right, however, to require additional financial information at the construction permit stage, particularly in cases in which the proposed power generating facility will be commonly owned by two or more existing companies or in which financing depends upon long-term arrangements for sharing of the power from the facility by two or more electrical generating companies.

Applicants are encouraged to consult with the Commission with respect to any questions they may have relating to the requirements of the Commission's regulations or the information set forth in this appendix.

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I. Applicants Which Are Established Organizations

A. Applications for construction permits

1. *Estimate of construction costs.* For electric utilities, each applicant's estimate of the total cost of the proposed facility should be broken down as follows and be accompanied by a statement describing the bases from which the estimate is derived:

(a) Total nuclear production plant costs	$_____
(b) Transmission, distribution, and general plant costs	$_____
(c) Nuclear fuel inventory cost for first core [1]	$_____
Total estimated cost	$_____

[1] Section 2.790 of 10 CFR Part 2 and § 9.5 of 10 CFR Part 9 indicate the circumstances under which information submitted by applicants may be withheld from public disclosure.

If the fuel is to be acquired by lease or other arrangement than purchase, the application should so state. The items to be included in these categories should be the same as those defined in the applicable electric plant and nuclear fuel inventory accounts prescribed by the Federal Energy Regulatory Commission or an explanation given as to any departure therefrom.

Since the composition of construction cost estimates for production and utilization facilities other than nuclear power reactors will vary according to the type of facility, no particular format is suggested for submitting such estimates. The estimate should, however, be itemized by categories of cost in sufficient detail to permit an evaluation of its reasonableness.

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2. *Source of construction funds.* The application should include a brief statement of the applicant's general financial plan for financing the cost of the facility, identifying the source or sources upon which the applicant relies for the necessary construction funds, e.g., internal sources such as undistributed earnings and depreciation accruals, or external sources such as borrowings.

50 FR 18852

3. *Applicant's financial statements.* The application should also include the applicant's latest published annual financial report, together with any current interim financial statements that are pertinent. If an annual financial report is not published, the balance sheet and operating statement covering the latest complete accounting year together with all pertinent notes thereto and certification by a public accountant should be furnished.

49 FR 35747

II. Applicants Which Are Newly Formed Entities

A. Applications for construction permits

1. *Estimate of construction costs.* The information that will normally be required of applicants which are newly formed entities will not differ in scope from that required of established organizations. Accordingly, applicants should submit estimates as described above for established organizations.

2. *Source of construction funds.* The application should specifically identify the source or sources upon which the applicant relies for the funds necessary to pay the cost of constructing the facility, and the amount to be obtained from each. With respect to each source, the application should describe in detail the applicant's legal and financial relationships with its stockholders, corporate affiliates, or others (such as financial institutions) upon which the applicant is relying for financial assistance. If the sources of funds relied upon include parent companies or other corporate affiliates, information to support the financial capability of each such company or affiliate to meet its commitments to the applicant should be set forth in the application. This information should be of the same kind and scope as would be required if the parent companies or affiliates were in fact the applicant. Ordinarily, it will be necessary that copies of agreements or contracts among the companies be submitted.

As noted earlier in this appendix, an applicant which is a newly formed entity will normally not be in a position to submit the usual types of balance sheets and income statements reflecting the results of prior operations. The applicant should, however, include in its application a statement of its assets, liabilities, and capital structure as of the date of the application.

49 FR 35747

III. Annual Financial Statement

Each holder of a construction permit for a production or utilization facility of a type described in § 50.21(b) or § 50.22, or a testing facility is required by § 50.71(b) to file its annual financial report with the Commission at the time of issuance thereof. This requirement does not apply to licensees or holders of construction permits for medical and research reactors.

50 FR 18852

IV. Additional Information

The Commission may, from time to time, request the applicant, whether an established organization or newly formed entity, to submit additional or more detailed information respecting its financial arrangements and status of funds if such information is deemed necessary to enable the Commission to determine an applicant's financial qualifications for the license.

Appendix D (Removed 39 FR 26279)

45 FR 55402

Appendix E—Emergency Planning and Preparedness for Production and Utilization

Table of Contents

I. Introduction
II. The Preliminary Safety Analysis Report
III. The Final Safety Analysis Report
IV. Content of Emergency Plans
V. Implementing Procedures

47 FR 30232

I. Introduction

Each applicant for a construction permit is required by § 50.34(a) to include in the preliminary safety analysis report a discussion of preliminary plans for coping with emergencies. Each applicant for an operating license is required by § 50.34(b) to include in the final safety analysis report plans for coping with emergencies.

This appendix establishes minimum requirements for emergency plans for use in attaining an acceptable state of emergency preparedness. These plans shall be described generally in the preliminary safety analysis report and submitted as part of the final safety analysis report.

The potential radiological hazards to the public associated with the operation of research and test reactors and fuel facilities licensed under 10 CFR Parts 50 and 70 involve considerations different than those associated with nuclear power reactors. Consequently, the size of Emergency Planning Zones [1] (EPZs) for facilities other than power reactors and the degree to which compliance with the requirements of this section and sections II, III, IV, and V as necessary will be determined on a case-by-case basis.[2]

Notwithstanding the above paragraphs, in the case of an operating license authorizing only fuel loading and/or low power operations up to 5% of rated power, no NRC or FEMA review, findings, or determinations concerning the state of offsite emergency preparedness or the adequacy of and the capability to implement State and local offsite emergency plans, as defined in this Appendix, are required prior to the issuance of such a license.

45 FR 55402

II. The Preliminary Safety Analysis Report

The Preliminary Safety Analysis Report shall contain sufficient information to ensure the compatibility of proposed emergency plans for both onsite areas and the EPZs, with facility design features, site layout, and site location with respect to such considerations as access routes, surrounding population distributions, land use, and local jurisdictional boundaries for the EPZs in the case of nuclear power reactors as well as the means by which the standards of § 50.47(b) will be met.

As a minimum, the following items shall be described:

A. Onsite and offsite organizations for coping with emergencies and the means for notification, in the event of an emergency, of persons assigned to the emergency organizations.

B. Contacts and arrangements made and documented with local, State, and Federal governmental agencies with responsibility for coping with emergencies, including identification of the principal agencies.

C. Protective measures to be taken within the site boundary and within each EPZ to protect health and safety in the event of an accident; procedures by which these measures are to be carried out (e.g., in the case of an evacuation, who authorizes the evacuation, how the public is to be notified and instructed, how the evacuation is to be carried out); and the expected response of offsite agencies in the event of an emergency.

(D) Features of the facility to be provided for onsite emergency first aid and decontamination and for emergency transportation of onsite individuals to offsite treatment facilities.

E. Provisions to be made for emergency treatment at offsite facilities of individuals injured as a result of licensed activities.

F. Provisions for a training program for employees of the licensee, including those who are assigned specific authority and responsibility in the event of an emergency, and for other persons who are not employees of the licensee but whose assistance may be needed in the event of a radiological emergency.

G. A preliminary analysis that projects the time and means to be employed in the notification of State and local governments and the public in the event of an emergency. A nuclear power plant applicant shall perform a preliminary analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations, noting major impediments to the evacuation or taking of protective actions.

H. A preliminary analysis reflecting the need to include facilities, systems, and methods for identifying the degree of seriousness and potential scope of radiological consequences of emergency situations within and outside the site boundary, including capabilities for dose projection using real-time meteorological information and for dispatch of radiological monitoring teams within the EPZs; and a preliminary analysis reflecting the role of the onsite technical support center and of the near-site emergency operations facility in assessing information, recommending protective action, and disseminating information to the public.

III. The Final Safety Analysis Report

The Final Safety Analysis Report shall contain the plans for coping with emergencies. The plans shall be an expression of the overall concept of operation; they shall describe the essential elements of advance planning that have been considered and the provisions that have been made to cope with emergency situations. The plans shall incorporate information about the emergency response roles of supporting organizations and offsite agencies. That information shall be sufficient to provide assurance of coordination among the supporting groups and with the licensee.

45 FR 55402

46 FR 28838

The plans submitted must include a description of the elements set out in Section IV for the Emergency Planning Zones (EPZs) [3] to an extent sufficient to demonstrate that the plans provide reasonable assurance that adequate protective measures can and will be taken in the event of an emergency.

IV. Content of Emergency Plans

The applicant's emergency plans shall contain, but not necessarily be limited to, information needed to demonstrate compliance with the elements set forth below, i.e., organization for coping with radiation emergencies, assessment action, activation of emergency organization, notification procedures, emergency facilities and equipment, training, maintaining emergency preparedness, and recovery. In addition, the emergency response plans submitted by an applicant for a nuclear power reactor operating license shall contain information needed to demonstrate compliance with the standards described in Section 50.47(b), and they will be evaluated against those standards. The nuclear power reactor operating license applicant shall also provide an analysis of the time required to evacuate and for taking other protective actions for various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations.

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A. Organization

The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization and the means for notification of such individuals in the event of an emergency. Specifically, the following shall be included:

1. A description of the normal plant operating organization.

2. A description of the onsite emergency response organization with a detailed discussion of:

a. Authorities, responsibilities, and duties of the individual(s) who will take charge during an emergency;

b. Plant staff emergency assignments;

c. Authorities, responsibilities, and duties on an onsite emergency coordinator who shall be in charge of the exchange of information with offsite authorities responsible for coordinating and implementing offsite emergency measures.

3. A description, by position and function to be performed, of the licensee's headquarters personnel who will be sent to the plant site to augment the onsite emergency organization.

4. Identification, by position and function to be performed, of persons within the licensee organization who will be responsible for making offsite dose projections, and a description of how these projections will be made and the results transmitted to State and local authorities, NRC, and other appropriate governmental entities.

[1] EPZs for power reactors are discussed in NUREG–0396; EPA 520/1–78–016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants," December 1978. The size of the EPZs for a nuclear power plant shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The size of the EPZs also may be determined on a case-by-case basis for gas-cooled nuclear reactors and for reactors with an authorized power level less than 250 MW thermal. Generally, the plume exposure pathway EPZ for nuclear power plants with an authorized power level greater than 250 MW thermal shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius.

[2] Regulatory Guide 2.6 will be used as guidance for the acceptability of research and test reactor emergency response plans.

5. Identification, by position and function to be performed, of other employees of the licensee with special qualifications for coping with emergency conditions that may arise. Other persons with special qualifications, such as consultants, who are not employees of the licensee and who may be called upon for assistance for emergencies shall also be identified. The special qualifications of these persons shall be described.

6. A description of the local offsite services to be provided in support of the licensee's emergency organization.

7. Identification of, and assistance expected from, appropriate State, local, and Federal agencies with responsibilities for coping with emergencies.

8. Identification of the State and/or local officials responsible for planning for, ordering, and controlling appropriate protective actions, including evacuations when necessary.

B. Assessment Actions

The means to be used for determining the magnitude of and for continually assessing the impact of the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety. The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. These emergency action levels shall be discussed and agreed on by the applicant and State and local governmental authorities and approved by NRC. They shall also be reviewed with the State and local governmental authorities on an annual basis.

C. Activation of Emergency Organization

The entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization shall be described. The communication steps to be taken to alert or activate emergency personnel under each class of emergency shall be described. Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies shall be described. The existence, but not the details, of a message authentication scheme shall be noted for such agencies. The emergency classes defined shall include: (1) notification of unusual events, (2) alert, (3) site area emergency, and (4) general emergency. These classes are further discussed in NUREG–0654; FEMA–REP–1.

D. Notification Procedures

1. Administrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should they become necessary, shall be described. This description shall include identification of the appropriate officials, by title and agency, of the State and local government agencies within the EPZs.[1]

2. Provisions shall be described for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency. Signs or other measures shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.

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3. A licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency. The licensee shall demonstrate that the State/local officials have the capability to make a public notification decision promptly on being informed by the licensee of an emergency condition. By February 1, 1982, each nuclear power reactor licensee shall demonstrate that administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway EPZ. The four-month period in 10 CFR 50.54(s)(2) for the correction of emergency plan deficiencies shall not apply to the initial installation of this public notification system that is required by February 1, 1982. *The four-month period will apply to correction of deficiencies identified during the initial installation and testing of the prompt public notification systems as well as those deficiencies discovered thereafter.* The design objective of the prompt public notification system shall be to have the capability to essentially complete the initial notification of the public within the plume exposure pathway EPZ within about 15 minutes. The use of this notification capability will range from immediate notification of the public (within 15 minutes of the time that State and local officials are notified that a situation exists requiring urgent action) to the more likely events where there is substantial time available for the State and local governmental officials to make a judgment whether or not to activate the public notification system. Where there is a decision to activate the notification system, the State and local officials will determine whether to activate the entire notification system simultaneously or in a graduated or staged manner. The responsibility for activating such a public notification system shall remain with the appropriate governmental authorities.

46 FR 63031

E. Emergency Facilities and Equipment

Adequate provisions shall be made and described for emergency facilities and equipment, including:

1. Equipment at the site for personnel monitoring;

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2. Equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment;

3. Facilities and supplies at the site for decontamination of onsite individuals;

4. Facilities and medical supplies at the site for appropriate emergency first aid treatment;

5. Arrangements for the services of physicians and other medical personnel qualified to handle radiation emergencies onsite;

6. Arrangements for transportation of contaminated injured individuals from the site to specifically identified treatment facilities outside the site boundary;

7. Arrangements for treatment of individuals injured in support of licensed activities on the site at treatment facilities outside the site boundary;

8. A licensee onsite technical support center and a licensee near-site emergency operations facility from which effective direction can be given and effective control can be exercised during an emergency;

9. At least one onsite and one offsite communications system; each system shall have a backup power source.

All communication plans shall have arrangements for emergencies, including titles and alternates for those in charge at both ends of the communication links and the primary and backup means of communication. Where consistent with the function of the governmental agency, these arrangements will include:

a. Provision for communications with contiguous State/local governments within the plume exposure pathway EPZ. Such communications shall be tested monthly.

b. Provision for communications with Federal emergency response organizations. Such communications systems shall be tested annually.

c. Provision for communications among the nuclear power reactor control room, the onsite technical support center, and the near-site emergency operations facility; and among the nuclear facility, the principal State and local emergency operations centers, and the field assessment teams. Such communications systems shall be tested annually.

d. Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the nuclear power reactor control room, the onsite technical support center, and the near-site emergency operations facility. Such communications shall be tested monthly.

F. Training.

The program to provide for (1) the training of employees and exercising, by periodic drills, of radiation emergency plans to ensure that employees of the licensee are familiar with their specific emergency response duties, and (2) the participation in the training and drills by other persons whose assistance may be needed in the event of a radiation emergency shall be described. This shall include a description of specialized initial training and periodic retraining programs to be provided to each of the following categories of emergency personnel:

49 FR 27733

a. Directors and/or coordinators of the plant emergency organization;

b. Personnel responsible for accident assessment, including control room shift personnel;

c. Radiological monitoring teams;

d. Fire control teams (fire brigades);

e. Repair and damage control teams;

f. First aid and rescue teams;

g. Medical support personnel;

h. Licensee's headquarters support personnel;

i. Security personnel.

In addition, a radiological orientation training program shall be made available to

local services personnel; e.g., local emergency services/Civil Defense, local law enforcement personnel, local news media persons.

The plan shall describe provisions for the conduct of emergency preparedness exercises as follows: Exercises shall test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, test the public notification system, and ensure that emergency organization personnel are familiar with their duties.[5]

1. A full participation [6] exercise which tests as much of the licensee, State and local emergency plans as is reasonably achievable without mandatory public participation shall be conducted for each site at which a power reactor is located for which the first operating license for that site is issued after July 13, 1982. This exercise shall be conducted within 1 year before the issuance of the first operating license for full power and prior to operation above 5% of rated power of the first reactor, and shall include participation by each State and local government within the plume exposure pathway EPZ and each State within the ingestion exposure pathway EPZ.

2. Each licensee at each site shall annually exercise its emergency plan.

3. Each licensee at each site shall exercise with offsite authorities such that the State and local government emergency plans for each operating reactor site are exercised biennially, with full or partial participation [6] by States and local governments, within the plume exposure pathway EPZ. State and local governments that have fully participated in a joint exercise since October 1, 1982, are eligible to fully participate in emergency preparedness exercises on a biennial frequency. The level of participation shall be as follows:

(a) A State shall at least partially participate in each offsite exercise at each site.

(b) A State shall fully participate in at least one offsite exercise every 2 years.

(c) At least once every 7 years, all States within the plume exposure pathway EPZ for a given site must fully participate in an offsite exercise for that site. This exercise must also involve full participation by local governments within the plume exposure pathway EPZ.

(d) Partial participation by a local government during an offsite exercise for a site is acceptable only when the local government is fully participating in a biennial exercise at another site.

(e) Each State within any ingestion exposure pathway EPZ shall exercise its plans and preparedness related to ingestion exposure pathway measures at least once every 5 years.

(f) Licensees shall enable any State or local government located within the plume exposure pathway EPZ to participate in annual exercises when requested by such State or local government.

4. Remedial exercises will be required if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with FEMA, cannot find reasonable assurance that adequate protective measures can be taken in the event to a radiological emergency. The extent of State and local participation in remedial exercises must be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.

5. All training, including exercises, shall provide for formal critiques in order to identify weak or deficient areas that need correction. Any weaknesses or deficiencies that are identified shall be corrected.

49 FR 27733

G. Maintaining Emergency Preparedness

Provisions to be employed to ensure that the emergency plan, its implementing procedures, and emergency equipment and supplies are maintained up to date shall be described.

45 FR 55402

H. Recovery

Criteria to be used to determine when, following an accident, reentry of the facility would be appropriate or when operation could be resumed shall be described.

47 FR 57670

V. Implementing Procedures

No less than 180 days prior to the scheduled issuance of an operating license for a nuclear power reactor or a license to possess nuclear material one copy of the applicant's detailed implementing procedures for its emergency plan shall be submitted to the Administrator of the appropriate NRC Regional Office, specified in Appendix D of Part 20 of this chapter and two copies are to be sent to the Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Licensees who are authorized to operate a nuclear power facility shall submit one copy of any changes to the emergency plan or procedures to the Administrator of the appropriate NRC Regional Office, specified in Appendix D, 10 CFR Part 20, and two copies to the Document Control Desk within 30 days of such changes.

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[5] Use of site specific simulators or computers is acceptable for any exercise.

[6] "Full participation" when used in conjunction with emergency preparedness exercises for a particular site means appropriate offsite local and State authorities and licensee personnel physically and actively take part in testing their integrated capability to adequately access and respond to an accident at a commercial nuclear power plant. "Full participation" includes testing the major observable portions of the onsite and offsite emergency plans and mobilization of State, local and licensee personnel and other resources in sufficient numbers to verify the capability to respond to the accident scenario.

[6] "Partial participation" when used in conjunction with emergency preparedness exercises for a particular site means appropriate offsite authorities shall actively take part in the exercise sufficient to test direction and control functions; i.e., (a) protective action decision making related to emergency action levels, and (b) communication capabilities among affected State and local authorities and the licensee.

App. F

PART 50 ● DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

APPENDIX F

POLICY RELATING TO THE SITING OF FUEL REPROCESSING PLANTS AND RELATED WASTE MANAGEMENT FACILITIES

1. Public health and safety considerations relating to licensed fuel reprocessing plants do not require that such facilities be located on land owned and controlled by the Federal Government. Such plants, including the facilities for the temporary storage of high-level radioactive wastes, may be located on privately owned property.

2. A fuel reprocessing plant's inventory of high-level liquid radioactive wastes will be limited to that produced in the prior 5 years. (For the purpose of this statement of policy, "high-level liquid radioactive wastes" means those aqueous wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuels.) High-level liquid radioactive wastes shall be converted to a dry solid as required to comply with this inventory limitation, and placed in a sealed container prior to transfer to a Federal repository in a shipping cask meeting the requirements of 10 CFR Part 71. The dry solid shall be chemically, thermally, and radiolytically stable to the extent that the equilibrium pressure in the sealed container will not exceed the safe operating pressure for that container during the period from canning through a minimum of 90 days after receipt (transfer of physical custody) at the Federal repository. All of these high-level radioactive wastes shall be transferred to a Federal repository no later than 10 years following separation of fission products from the irradiated fuel. Upon receipt, the Federal repository will assume permanent custody of these radioactive waste materials although industry will pay the Federal Government a charge which together with interest on unexpended balances will be designed to defray all costs of disposal and perpetual surveillance.

35 FR 17530

The Department of Energy will take title to the radioactive waste material upon transfer to a Federal repository. Before retirement of the reprocessing plant from operational status and before termination of licensing pursuant to § 50.82, transfer of all such wastes to a Federal repository shall be completed. Federal repositories, which will be limited in number, will be designated later by the Commission.

3. Disposal of high-level radioactive fission product waste material will not be permitted on any land other than that owned and controlled by the Federal Government.

4. A design objective for fuel reprocessing plants shall be to facilitate decontamination and removal of all significant radioactive wastes at the time the facility is permanently decommissioned. Criteria for the extent of decontamination to be required upon decommissioning and license termination will be developed in consultation with competent groups. Opportunity will be afforded for public comment before such criteria are made effective.

5. Applicants proposing to operate fuel reprocessing plants, in submitting information concerning financial qualifications as required by § 50.33(f), shall include information enabling the Commission to determine whether the applicant is financially qualified, among other things, to provide for the removal and disposal of radioactive wastes, during operation and upon decommissioning of the facility, in accordance with the Commission's regulations, including the requirements set out in this appendix.

6. With respect to fuel reprocessing plants already licensed, the licenses will be appropriately conditioned to carry out the purposes of the policy stated above with respect to high-level radioactive fission product wastes generated after installation of new equipment for interim storage of liquid wastes, or after installation of equipment required for solidification without interim liquid storage. In either case, such equipment shall be installed at the earliest practicable date, taking into account the time required for design, procurement and installation thereof. With respect to such plants, the application of the policy stated in this appendix to existing wastes and to wastes generated prior to the installation of such equipment, will be the subject of a further rule making proceeding.

36 FR 5411

* Amended 45FR14199

Appendix G—Fracture Toughness Requirements

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I. Introduction and Scope
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III. Fracture Toughness Tests
IV. Fracture Toughness Requirements
V. Inservice Requirements—Reactor Vessel Beltline Materials

I. Introduction and Scope

This appendix specifies fracture toughness requirements for ferritic materials of pressure-retaining components of the reactor coolant pressure boundary of light water nuclear power reactors to provide adequate margins of safety during any condition of normal operation, including anticipated operational occurrences and system hydrostatic tests, to which the pressure boundary may be subjected over its service lifetime.

The ASME Code forms the basis for the requirements of this Appendix. "ASME Code" means the American Society of Mechanical Engineers Boiler and Pressure Vessel Code. If no section is specified, the reference is to Section III, Division 1, "Rules for Construction of Nuclear Power Plant Components." "Section XI" means Section XI, Division 1, "Rules for Inservice Inspection of Nuclear Power Plant Components." If no edition or addenda is specified the applicable ASME Code edition and addenda and any limitations and modifications thereof are specified in § 50.55a of this part.

The ASME Boiler and Pressure Vessel Code has been approved for incorporation by reference by the Director of the Federal Register. A notice of any changes made to the material incorporated by reference will be published in the **Federal Register**. Copies of the ASME Boiler and Pressure Vessel Code may be purchased from the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th St., New York, NY 10017. It is also available for inspection at the Nuclear Regulatory Commission's Public Document Room, 1717 H Street NW., Washington, D.C.

The requirements of this appendix apply to the following materials:

Note.—The adequacy of the fracture toughness of other ferritic materials not covered in this section shall be demonstrated to the Director, Office of Nuclear Reactor Regulation, on an individual case basis.

A. Carbon and low-alloy ferritic steel plate, forgings, castings, and pipe with specified minimum yield strengths not over 50,000 psi (345 MPa), and to those with specified minimum yield strengths greater than 50,000 psi (345 MPa) but not over 90,000 psi (621 MPa) if qualified by using methods equivalent to those described in paragraph G–2110 of the ASME Code as defined in paragraph II.A. of this appendix. The latest edition and addenda permitted by paragraph 50.55a(b) of this part at the time the analysis is made is to be used for the purpose of this paragraph.

B. Welds and weld heat-affected zones in the materials specified in paragraph I.A. of this appendix.

C. Materials for bolting and other types of fasteners with specified minimum yield strengths not over 130,000 psi (896 MPa).

II. Definitions

A. "Ferritic material" means carbon and low-alloy steels, higher alloy steels including all stainless alloys of the 4xx series, and maraging and precipitation hardening steels with a predominantly body-centered cubic crystal structure.

B. "System hydrostatic tests" means all preoperational system leakage and hydrostatic pressure tests and all system leakage and hydrostatic pressure tests performed during the service life of the pressure boundary in compliance with the ASME Code, Section XI.

C. "Specified minimum yield strength" means the minimum yield strength (in the unirradiated condition) of a material specified in the construction code under which the component is built under § 50.55a of this part.

D. "Reference temperature" means the reference temperature, RT_{NDT}, as defined in the ASME Code.

E. "Adjusted reference temperature" means the reference temperature as adjusted for irradiation effects (see Section V of this Appendix) by adding to RT_{NDT} the temperature shift, measured at the 30 ft-lb (41J) level, in the average Charpy curve for the irradiated material relative to that for the unirradiated material.

F. "Beltline" or "Beltline region of reactor vessel" means the region of the reactor vessel (shell material including welds, heat affected zones, and plates or forgings) that directly surrounds the effective height of the active core and adjacent regions of the reactor vessel that are predicted to experience sufficient neutron radiation damage to be considered in the selection of the most limiting material with regard to radiation damage.

III. Fracture Toughness Tests

A. To demonstrate compliance with the fracture toughness requirements of Sections IV and V of this appendix, ferritic materials must be tested in accordance with the ASME Code and, for the beltline materials, the test requirements of Appendix H of this part. For a reactor vessel that was constructed to an ASME Code earlier than the Summer 1972 Addenda of the 1971 Edition (under § 50.55a of this part), the fracture toughness data and data analyses must be supplemented in a manner approved by the Director, Office of Nuclear Reactor Regulation, to demonstrate equivalence with the fracture toughness requirements of this Appendix.

B. Test methods for supplemental fracture toughness tests described in paragraph V.C.2. of this appendix must be submitted to and approved by the Director, Office of Nuclear Reactor Regulation, prior to testing.

C. All fracture toughness test programs conducted in accordance with paragraphs A and B of this section must comply with ASME Code requirements for calibration of test equipment, qualification of test personnel, and retention of records of these functions and of the test data.

IV. Fracture Toughness Requirements

A. The pressure-retaining components of the reactor coolant pressure boundary that are made of ferritic materials must meet the requirements of the ASME Code supplemented as follows for fracture toughness during system hydrostatic tests and any condition of normal operation, including anticipated operational occurrences:

1. Reactor vessel beltline materials must have Charpy upper-shelf energy [1] of no less than 75 ft-lb (102J) initially and must maintain upper-shelf energy throughout the life of the vessel of no less than 50 ft-lb (68J), unless it is demonstrated in a manner approved by the Director, Office of Nuclear Reactor Regulation, that lower values of upper-shelf energy will provide margins of safety against fracture equivalent to those required by Appendix G of the ASME Code. The latest edition and addenda of the ASME Code permitted by paragraph 50.55a(b) of this part at the time the analysis is made are to be used for the purposes of paragraphs IV.A.1 and IV.A.2 of this appendix.

2. When the core is not critical, pressure-temperature limits for the reactor vessel must be at least as conservative as those obtained by following the methods of analysis and the required margins of safety of Appendix G of the ASME Code supplemented by the requirements of Section V of this appendix. In addition, when pressure exceeds 20 percent of the preservice system hydrostatic test pressure, the temperature of the closure flange regions that are highly stressed by the bolt preload must exceed the reference temperature of the material in those regions by at least 120°F (67°C) for normal operation and by 90°F (50°C) for hydrostatic pressure tests and leak tests, unless a lower temperature can be justified by showing that the margins of safety for those regions when they are controlling are equivalent to those required for the beltline when it is controlling. The justification submitted for the pressure temperature limits must describe the methods of analysis used.

3. When the core is critical (other than for the purpose of low-level physics tests), the temperature of the reactor vessel must not be lower than 40°F (22°C) above the minimum permissible temperature of paragraph 2. of this section nor lower than the minimum permissible temperature for the inservice system hydrostatic pressure test. An exception may be made for boiling water reactor vessels when water level is within the normal range for power operation and the pressure is less than 20 percent of the preservice system hydrostatic test pressure. In this case the minimum permissible temperature is 60°F (33°C) above the reference temperature of the closure flange regions that are highly stressed by the bolt preload.

4. If there is no fuel in the reactor during system hydrostatic pressure tests or leak tests, the minimum permissible test temperature must be 60°F (33°C) above the adjusted reference temperature of the reactor vessel material in the region that is controlling (as specified in paragraph IV.A.2 of this appendix).

5. If there is fuel in the reactor during system hydrostatic pressure tests or leak tests, the requirements of paragraphs 2 or 3 of this section apply, depending on whether the core is critical during the test.

B. Reactor vessels for which the predicted

[1] Defined in ASTM E 185–79 and –82 which are incorporated by reference in Appendix H.

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value of upper-shelf energy at end of life is below 50 ft-lb or for which the predicted value of adjusted reference temperature at end of life exceeds 200°F (93°C) must be designed to permit a thermal annealing treatment at a sufficiently high temperature to recover material toughness properties of ferritic materials of the reactor vessel beltline.

V. Inservice Requirements—Reactor Vessel Beltline Material

A. The effects of neutron radiation on the reference temperature and upper shelf energy of reactor vessel beltline materials, including welds, are to be predicted from the results of pertinent radiation effects studies in addition to the results of the surveillance program of Appendix H to this part.

B. Reactor vessels may continue to be operated only for that service period within which the requirements of Section IV of this appendix are satisfied using the predicted value of the adjusted reference temperature and the predicted value of the upper-shelf energy at the end of the service period to account for the effects of radiation on the fracture toughness of the beltline materials. These predictions are to be made for the radiation conditions at the critical location on the crack front of the assumed flaw.[9] The highest adjusted reference temperature and the lowest upper-shelf energy level of all the beltline materials must be used to verify that the fracture toughness requirements are satisfied.

C. In the event that the requirements of Section V.B. of this appendix cannot be satisfied, reactor vessels may continue to be operated provided all of the following requirements are satisfied:

1. A volumetric examination of 100 percent of the beltline materials that do not satisfy the requirements of Section V.B. of this appendix is made and any flaws characterized according to Section XI of the ASME Code and as otherwise specified by the Director, Office of Nucelar Reactor Regulation.

2. Additional evidence of the fracture toughness of the beltline materials after exposure to neutron irradiation is to be obtained from results of supplemental fracture toughness tests.

3. An analysis is performed that conservatively demonstrates, making appropriate allowances for all uncertainties, the existence of equivalent margins of safety for continued operation.

D. If the procedures of Section V.C. of this appendix do not indicate the existence of an equivalent safety margin, the reactor vessel beltline may, subject to the approval of the Director, Office of Nuclear Reactor Regulation, be given a thermal annealing treatment to recover the fracture toughness of the material. The degree of recovery is to be measured by testing additional specimens that have been withdrawn from the surveillance program capsules and that have been annealed under the same time-at-temperature conditions as those given the beltline material. The results, together with the results of other pertinent annealing-effects studies, are to provide the basis for establishing the adjusted reference temperature and upper-shelf energy after annealing. The reactor vessel may continue to be operated only for that service period within which the predicted fracture toughness of the beltline region materials satisfies the requirements of Section IV.A. of this appendix using the values of adjusted reference temperature and upper-shelf energy that include the effects of annealing and subsequent irradiation.

E. The proposed programs for satisfying the requirements of Sections V.C. and V.D. of this appendix are to be reported to the Director, Office of Nuclear Reactor Regulation, as specified in § 50.4(a) of this Part, for review and approval on an individual case basis at least 3 years prior to the date when the predicted fracture toughness levels will no longer satisfy the requirements of section V B of this appendix.

[9] For example, in analyses that follow Appendix G of the ASME Code, the radiation conditions to be used are those predicted for the material one fourth of the way through the vessel wall, i.e., at the deepest point on the crack front of the postulated defect.

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Appendix H—Reactor Vessel Material Surveillance Program Requirements

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I. Introduction
II. Surveillance Program-Criteria
III. Report of Test Results

I. Introduction

The purpose of the material surveillance program required by this Appendix is to monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region of light water nuclear power reactors resulting from exposure of these materials to neutron irradiation and the thermal environment. Under the program, fracture toughness test data are obtained from material specimens exposed in surveillance capsules, which are withdrawn periodically from the reactor vessel. These data will be used as described in Sections IV and V of Appendix G to this part.

ASTM E 185–73, –79 and –82, "Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels," which are referenced in the following paragraphs, have been approved for incorporation by reference by the Director of the Federal Register. A notice of any changes made to the material incorporated by reference will be published in the Federal Register. Copies of ASTM E 185–73, –79, and –82, may be obtained from the American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 19103. Copies will be available for inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C.

II. Surveillance Program Criteria

A. No material surveillance program is required for reactor vessels for which it can be conservatively demonstrated by analytical methods applied to experimental data and tests performed on comparable vessels making appropriate allowances for all uncertainties in the measurements, that the peak neutron fluence (E>1MEV) at the end of the design life of the vessel will not exceed 10^{17} n/cm^2.

B. Reactor vessels that do not meet the conditions of paragraph II.A. of this Appendix must have their beltline materials monitored by this Appendix.

1. That part of the surveillance program conducted prior to the first capsule withdrawal must meet the requirements of the edition of ASTM E 185 that is current on the issue date of the ASME Code to which the reactor vessel was purchased. Later editions of ASTM E 185 may be used, but including only those editions through 1982. For each capsule withdrawal after July 26, 1983, the test procedures and reporting requirements must meet the requirements of ASTM E 185–82 to the extent practical for the configuration of the specimens in the capsule. For each capsule withdrawal prior to July 26, 1983 either the 1973, the 1979, or the 1982 edition of ASTM E 185 may be used.

2. Surveillance specimen capsules must be located near the inside vessel wall in the beltline region so that the specimen irradiation history duplicates, to the extent practicable within the physical constraints of the system, the neutron spectrum, temperature history, and maximum neutron fluence experienced by the reactor vessel inner surface. If the capsule holders are attached to the vessel wall or to the vessel cladding, construction and inservice inspection of the attachments and attachment welds must be done according to the requirements for permanent structural attachments to reactor vessels given in Sections III and XI of the ASME Code. The design and location of the capsule holders shall permit insertion of replacement capsules. Accelerated irradiation capsule may be used in addition to the required number of surveillance capsules specified in ASTM E 185.

3. A proposed withdrawal schedule must be submitted with a technical justification therefor to the Director, Office of Nuclear Reactor Regulation, for approval. The proposed schedule must be approved prior to implementation.

C. An integrated surveillance program may be considered for a set of reactors that have similar design and operating features. The representative materials chosen for surveillance from each reactor in the set may be irradiated in one or more of the reactors, but there must be an adequate dosimetry program for each reactor. No reduction in the requirements for number of materials to be irradiated, specimen types, or number of specimens per reactor is permitted, but the amount of testing may be reduced if the initial results agree with predictions. Integrated surveillance programs must be approved by the Director, Office of Nuclear Reactor Regulation, on a case-by-case basis. Criteria for approval include the following considerations:

1. The design and operating features of the reactors in the set must be sufficiently similar to permit accurate comparisons of the predicted amount of radiation damage as a function of total power output.

2. There must be adequate arrangement for data sharing between plants.

3. There must be a contingency plan to assure that the surveillance program for each reactor will not be jeopardized by operation at reduced power level or by an extended outage of another reactor from which data are expected.

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4. There must be substantial advantages to be gained, such as reduced power outages or reduced personnel exposure to radiation, as a direct result of not requiring surveillance capsules in all reactors in the set.

III. Report of Test Results

A. Each capsule withdrawal and the test results must be the subject of a summary technical report to be submitted to the Director, Office of Nuclear Reactor Regulation, as specified in § 50.4(a) of this Part, within 1 year after capsule withdrawal, unless an extension is granted by the Director.

B. The report must include the data required by ASTM E 185, as specified in paragraph II.B.1 of this Appendix, and the results of all fracture toughness tests conducted on the beltline materials in the irradiated and unirradiated conditions.

C. If a change in the Technical Specifications is required, either in the pressure-temperature limits or in the operating procedures required to meet the limits, the expected date for submittal of the revised Technical Specifications must be provided with the report.

40 FR 58847

APPENDIX I—NUMERICAL GUIDES FOR DESIGN OBJECTIVES AND LIMITING CONDITIONS FOR OPERATION TO MEET THE CRITERION "AS LOW AS IS REASONABLY ACHIEVABLE" FOR RADIOACTIVE MATERIAL IN LIGHT-WATER-COOLED NUCLEAR POWER REACTOR EFFLUENTS

SECTION I. *Introduction.* Section 50.34a provides that an application for a permit to construct a nuclear power reactor shall include a description of the preliminary design of equipment to be installed to maintain control over radioactive materials in gaseous and liquid effluents produced during normal reactor operations, including expected operational occurrences. In the case of an application filed on or after January 2, 1971, the application must also identify the design objectives, and the means to be employed, for keeping levels of radioactive material in effluents to unrestricted areas as low as practicable.

Section 50.36a contains provisions designed to assure that releases of radioactive material from nuclear power reactors to unrestricted areas during normal reactor operations, including expected operational occurrences, are kept as low as practicable.

This appendix provides numerical guides for design objectives and limiting conditions for operation to assist applicants for, and holders of, licenses for light-water-cooled nuclear power reactors in meeting the requirements of §§ 50.34a and 50.36a that radioactive material in effluents released from these facilities to unrestricted areas be kept as low as is reasonably achievable. Design objectives and limiting conditions for operation conforming to the guidelines of this appendix shall be deemed a conclusive showing of compliance with the "as low as is reasonably achievable" requirements of 10 CFR 50.34a and 50.36a. Design objectives and limiting conditions for operation differing from the guidelines may also be used, subject to a case-by-case showing of a sufficient basis for the findings of "as low as is reasonably achievable" required by §§ 50.34a and 50.36a. The guides presented in this appendix are appropriate only for light-water-cooled nuclear power reactors and not for other types of nuclear facilities.

40 FR 19439

SEC. II. *Guides on design objectives for light-water-cooled nuclear power reactors licensed under 10 CFR Part 50.* The guides on design objectives set forth in this section may be used by an applicant for a permit to construct a light-water-cooled nuclear power reactor as guidance in meeting the requirements of § 50.34a(a). The applicant shall provide reasonable assurance that the following design objectives will be met.

A. The calculated annual total quantity of all radioactive material above background[1] to be released from each light-water-cooled nuclear power reactor to unrestricted areas will not result in an estimated annual dose or dose commitment from liquid effluents for any individual in an unrestricted area from all pathways of exposure in excess of 3 millirems to the total body or 10 millirems to any organ.

B.1. The calculated annual total quantity of all radioactive material above background to be released from each light-water-cooled nuclear power reactor to the atmosphere will not result in an estimated annual air dose from gaseous effluents at any location near ground level which could be occupied by individuals in unrestricted areas in excess of 10 millirads for gamma radiation or 20 millirads for beta radiation.

2. Notwithstanding the guidance of paragraph B.1:

40 FR 58847

(a) The Commission may specify, as guidance on design objectives, a lower quantity of radioactive material above background to be released to the atmosphere if it appears that the use of the design objectives in paragraph B.1 is likely to result in an estimated annual external dose from gaseous effluents to any individual in an unrestricted area in excess of 5 millirems to the total body; and

(b) Design objectives based upon a higher quantity of radioactive material above background to be released to the atmosphere than the quantity specified in paragraph B.1 will be deemed to meet the requirements for keeping levels of radioactive material in gaseous effluents as low as is reasonably achievable if the applicant provides reasonable assurance that the proposed higher quantity will not result in an estimated annual external dose from gaseous effluents to any individual in unrestricted areas in excess of 5 millirems to the total body or 15 millirems to the skin.

40 FR 19439

C. The calculated annual total quantity of all radioactive iodine and radioactive material in particulate form above background to be released from each light-water-cooled nuclear power reactor in effluents to the atmosphere will not result in an estimated annual dose or dose commitment from such radioactive iodine and radioactive material in particulate form for any individual in an unrestricted area from all pathways of exposure in excess of 15 millirems to any organ.

D. In addition to the provisions of paragraphs A, B, and C above, the applicant shall include in the radwaste system all items of reasonably demonstrated technology that, when added to the system sequentially and in order of diminishing cost-benefit return, can for a favorable cost-benefit ratio effect reductions in dose to the population reasonably expected to be within 50 miles of the reactor. As an interim measure and until establishment and adoption of better values (or other appropriate criteria), the values $1000 per total body man-rem and $1000 per man-thyroid-rem (or such lesser values as may be demonstrated to be suitable in a particular case) shall be used in this cost-benefit analysis.

40 FR 19439

40 FR 40816

The requirements of this paragraph D need not be complied with by persons who have filed applications for construction permits which were docketed on or after January 2, 1971, and prior to June 4, 1976, if the radwaste systems and equipment described in the preliminary or final safety analysis report and amendments thereto satisfy the Guides on Design Objectives for Light-Water-Cooled Nuclear Power Reactors proposed in the Concluding Statement of Position of the Regulatory Staff in Docket-RM-50-2 dated February 20, 1974, pp. 25-30, reproduced in the Annex to this Appendix I.

40 FR 19439

SEC. III. *Implementation.* A.1. Conformity with the guides on design objectives of Section II shall be demonstrated by calculational procedures based upon models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated, all uncertainties being considered together. Account shall be taken of the cumulative effect of all sources and pathways within the plant contributing to the particular type of effluent being considered. For determination of design objectives in accordance with the guides of Section II, the estimations of exposure shall be made with respect to such potential land and water usage and food pathways as could actually exist during the term of plant operation: *Provided,* That, if the requirements of paragraph B of Section III are fulfilled, the applicant shall be deemed to have complied with the requirements of paragraph C of Section II with respect to radioactive iodine if estimations of exposure are made on the basis of such food pathways and individual receptors as actually exist at the time the plant is licensed.

2. The characteristics attributed to a hypothetical receptor for the purpose of estimating internal dose commitment shall take into account reasonable deviations of individual habits from the average. The applicant may take account of any real phenomenon or factors actually affecting the estimate of radiation exposure, including the characteristics of the plant, modes of discharge of radioactive materials, physical processes tending to attenuate the quantity of radioactive material to which an individual would be exposed, and the effects of averaging exposures over times during which determining factors may fluctuate.

B. If the applicant determines design objectives with respect to radioactive iodine on the basis of existing conditions and if potential changes in land and water usage and food pathways could result in exposures in excess of the guideline values of paragraph C of Section II, the applicant shall provide reasonable assurance that a monitoring and surveillance program will be performed to determine:

1. The quantities of radioactive iodine actually released to the atmosphere and deposited relative to those estimated in the determination of design objectives;

[1] Here and elsewhere in this appendix background means radioactive materials in the environment and in the effluents from light-water-cooled power reactors not generated in, or attributable to, the reactors of which specific account is required in determining design objectives.

40 FR 19439

2. Whether changes in land and water usage and food pathways which would result in individual exposures greater than originally estimated have occurred; and

3. The content of radioactive iodine and foods involved in the changes, if and when they occur.

40 FR 58847

SEC. IV. *Guides on technical specifications for limiting conditions for operation for light-water-cooled nuclear power reactors licensed under 10 CFR Part 50.* The guides on limiting conditions for operation for light-water-cooled nuclear power reactors set forth below may be used by an applicant for a license to operate a light-water-cooled nuclear power reactor as guidance in developing technical specifications under § 50.36a(a) to keep levels of radioactive materials in effluents to unrestricted areas as low as is reasonably achievable.

Section 50.36a(b) provides that licensees shall be guided by certain considerations in establishing and implementing operating procedures specified in technical specifications that take into account the need for operating flexibility and at the same time assure that the licensee will exert his best effort to keep levels of radioactive material in effluents as low as is reasonably achievable. The guidance set forth below provides additional and more specific guidance to licensees in this respect.

Through the use of the guides set forth in this Section it is expected that the annual releases of radioactive material in effluents from light-water-cooled nuclear power reactors can generally be maintained within the levels set forth as numerical guides for design objectives in Section II.

At the same time, the licensee is permitted the flexibility of operation, compatible with considerations of health and safety, to assure that the public is provided a dependable source of power even under unusual operating conditions which may temporarily result in releases higher than such numerical guides for design objectives but still within levels that assure that the average population exposure is equivalent to small fractions of doses from natural background radiation. It is expected that in using this operational flexibility under unusual operating conditions, the licensee will exert his best efforts to keep levels of radioactive material in effluents within the numerical guides for design objectives.

42 FR 20138

A. If the quantity of radioactive material actually released in effluents to unrestricted areas from a light-water-cooled nuclear power reactor during any calendar quarter is such that the resulting radiation exposure, calculated on the same basis as the respective design objective exposure, would exceed one-half the design objective annual exposure derived pursuant to Sections II and III, the licensee shall: [2]

1. Make an investigation to identify the causes for such release rates;

2. Define and initiate a program of corrective action; and

41 FR 16445

3. Report these actions to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this Chapter with a copy to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, within 30 days from the end of the quarter during which the release occurred.

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B. The licensee shall establish an appropriate surveillance and monitoring program to:

1. Provide data on quantities of radioactive material released in liquid and gaseous effluents to assure that the provisions of paragraph A of this section are met;

2. Provide data on measurable levels of radiation and radioactive materials in the environment to evaluate the relationship between quantities of radioactive material released in effluents and resultant radiation doses to individuals from principal pathways of exposure; and

3. Identify changes in the use of unrestricted areas (e.g., for agricultural purposes) to permit modifications in monitoring programs for evaluating doses to individuals from principal pathways of exposure.

C. If the data developed in the surveillance and monitoring program described in paragraph B of this section and in paragraph B of Section III or from other monitoring programs show that the relationship between the quantities of radioactive material released in liquid and gaseous effluents and the dose to individuals in unrestricted areas is significantly different from that assumed in the calculations used to determine design objectives pursuant to Sections II and III, the Commission may modify the quantities in the technical specifications defining the limiting conditions for operation in a license authorizing operation of a light-water-cooled nuclear power reactor.

SEC. V. *Effective dates.* A. The guides for limiting conditions for operation set forth in this appendix shall be applicable in any case in which an application was filed on or after January 2, 1971, for a permit to construct a light-water-cooled nuclear power reactor.

B. For each light-water-cooled nuclear power reactor constructed pursuant to a permit for which application was filed prior to January 2, 1971, the holder of the permit or a license, authorizing operation of the reactor shall, within a period of twelve months from June 4, 1975, file with the Commission:

40 FR 58847

1. Such information as is necessary to evaluate the means employed for keeping levels of radioactivity in effluents to unrestricted areas as low as is reasonably achievable, including all such information as is required by § 50.34a (b) and (c) not already contained in his application; and

2. Plans and proposed technical specifications developed for the purpose of keeping releases of radioactive materials to unrestricted areas during normal reactor operations, including expected operational occurrences, as low as is reasonably achievable.

40 FR 40816

CONCLUDING STATEMENT OF POSITION OF THE REGULATORY STAFF (DOCKET-RM-50-2)

GUIDES ON DESIGN OBJECTIVES FOR LIGHT-WATER-COOLED NUCLEAR POWER REACTORS

A. For radioactive material above background [1] in liquid effluents to be released to unrestricted areas:

1. The calculated annual total quantity of all radioactive material from all light-water-cooled nuclear power reactors at a site should not result in an annual dose or dose commitment to the total body or to any organ of an individual in an unrestricted area from all pathways of exposure in excess of 5 millirems; and

2. The calculated annual total quantity of radioactive material, except tritium and dissolved gases, should not exceed 5 curies for each light-water-cooled reactor at a site.

3. Notwithstanding the guidance in paragraph A.2, for a particular site, if an applicant for a permit to construct a light-water-cooled nuclear power reactor has proposed baseline in-plant control measures [2] to reduce the possible sources of radioactive material in liquid effluent releases and the calculated quantity exceeds the quantity set forth in paragraph A.2, the requirements for design objectives for radioactive material in liquid effluents may be deemed to have been met provided:

a. The applicant submits an evaluation of the potential for effects from long-term buildup in the environment in the vicinity of the site of radioactive material, with a radioactive half-life greater than one year, to be released; and

b. The provisions of paragraph A.1 are met.

B. For radioactive material above background in gaseous effluents the annual total quantity of radioactive material to be released to the atmosphere by all light-water-cooled nuclear power reactors at a site:

1. The calculated annual air dose due to gamma radiation at any location near ground level which could be occupied by individuals at or beyond the boundary of the site should not exceed 10 millirads; and

2. The calculated annual air dose due to beta radiation at any location near ground level which could be occupied by individuals at or beyond the boundary of the site should not exceed 20 millirads.

3. Notwithstanding the guidance in paragraphs B.1 and B.2, for a particular site:

a. The Commission may specify, as guidance on design objectives, a lower quantity of radioactive material above background in gaseous effluents to be released to the atmosphere if it appears that the use of the design objectives described in paragraphs B.1 and B.2 is likely to result in an annual dose to an individual in an unrestricted area in excess of 5 millirems to the total body or 15 millirems to the skin; or

[1] "Background," means the quantity of radioactive material in the effluent from light-water-cooled nuclear power reactors at a site that did not originate in the reactors.

[2] Such measures may include treatment of clear liquid waste streams (normally tritiated, nonaerated, low conductivity equipment drains and pump seal leakoff), dirty liquid waste streams (normally nontritiated, aerated, high conductivity building sumps, floor and sample station drains), steam generator blowdown streams, chemical waste streams, low purity and high purity liquid streams (resin regenerate and laboratory wastes), as appropriate for the type of reactor.

[2] Section 50.36a(a)(2) requires the licensee to submit certain reports to the Commission with regard to the quantities of the principal radionuclides released to unrestricted areas. It also provides that, on the basis of such reports and any additional information the Commission may obtain from the licensee and others, the Commission may from time to time require the license to take such action as the Commission deems appropriate.

40 FR 58847

b. Design objectives based on a higher quantity of radioactive material above background in gaseous effluents to be released to the atmosphere than the quantity specified in paragraphs B.1 and B.2 may be deemed to meet the requirements for keeping levels of radioactive material in gaseous effluents as low as is reasonably achievable if the applicant provides reasonable assurance that the proposed higher quantity will not result in annual doses to an individual in an unrestricted area in excess of 5 millirems to the total body or 15 millirems to the skin.

40 FR 40816

C. For radioactive iodine and radioactive material in particulate form above background released to the atmosphere:

1. The calculated annual total quantity of all radioactive iodine and radioactive material in particulate form from all light-water-cooled nuclear power reactors at a site should not result in an annual dose or dose commitment to any organ of an individual in an unrestricted area from all pathways of exposure in excess of 15 millirems. In determining the dose or dose commitment the portion thereof due to intake of radioactive material via the food pathways may be evaluated at the locations where the food pathways actually exist; and

2. The calculated annual total quantity of iodine-131 in gaseous effluents should not exceed 1 curie for each light-water-cooled nuclear power reactor at a site.

3. Notwithstanding the guidance in paragraphs C.1 and C.2 for a particular site, if an applicant for a permit to construct a light-water-cooled nuclear power reactor has proposed baseline in-plant control measures [3] to reduce the possible sources of radioactive iodine releases, and the calculated annual quantities taking into account such control measures exceed the design objective quantities set forth in paragraphs C.1 and C.2, the requirements for design objectives for radioactive iodine and radioactive material in particulate form in gaseous effluents may be deemed to have been met provided the calculated annual total quantity of all radioactive iodine and radioactive material in particulate form that may be released in gaseous effluents does not exceed four times the quantity calculated pursuant to paragraph C.1.

[3] Such in-plant control measures may include treatment of steam generator blowdown tank exhaust, clean steam supplies for turbine gland seals, condenser vacuum systems, containment purging exhaust and ventilation exhaust systems and special design features to reduce contaminated steam and liquid leakage from valves and other sources such as sumps and tanks, as appropriate for the type of reactor.

APPENDIX J

PRIMARY REACTOR CONTAINMENT LEAKAGE TESTING FOR WATER-COOLED POWER REACTORS

I. Introduction.
II. Explanation of terms.
III. Leakage test requirements.
A. Type A test.
B. Type B test.
C. Type C test.
D. Periodic retest schedule.
IV. Special test requirements.
A. Containment modifications.
B. Multiple leakage-barrier containments.
V. Inspection and reporting of tests.
A. Containment inspection.
B. Report of test results.

I. INTRODUCTION

One of the conditions of all operating licenses for water-cooled power reactors as specified in § 50.54(o) is that primary reactor containments shall meet the containment leakage test requirements set forth in this appendix. These test requirements provide for preoperational and periodic verification by tests of the leak-tight integrity of the primary reactor containment, and systems and components which penetrate containment of water-cooled power reactors, and establish the acceptance criteria for such tests. The purposes of the tests are to assure that (a) leakage through the primary reactor containment and systems and components penetrating primary containment shall not exceed allowable leakage rate values as specified in the technical specifications or associated bases and (b) periodic surveillance of reactor containment penetrations and isolation valves is performed so that proper maintenance and repairs are made during the service life of the containment, and systems and components penetrating primary containment. These test requirements may also be used for guidance in establishing appropriate containment leakage test requirements in technical specifications or associated bases for other types of nuclear power reactors.

38 FR 4385

II. EXPLANATION OF TERMS

A. "Primary reactor containment" means the structure or vessel that encloses the components of the reactor coolant pressure boundary, as defined in § 50.2(v), and serves as an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment.

B. "Containment isolation valve" means any valve which is relied upon to perform a containment isolation function.

C. "Reactor containment leakage test program" includes the performance of Type A, Type B, and Type C tests, described in II.F, II.G, and II.H, respectively.

D. "Leakage rate" for test purposes is that leakage which occurs in a unit of time, stated as a percentage of weight of the original content of containment air at the leakage rate test pressure that escapes to the outside atmosphere during a 24-hour test period.

E. "Overall integrated leakage rate" means that leakage rate which obtains from a summation of leakage through all potential leakage paths including containment welds, valves, fittings, and components which penetrate containment.

F. "Type A Tests" means tests intended to measure the primary reactor containment overall integrated leakage rate (1) after the containment has been completed and is ready for operation, and (2) at periodic intervals thereafter.

G. "Type B Tests" means tests intended to detect local leaks and to measure leakage across each pressure-containing or leakage-limiting boundary for the following primary reactor containment penetrations:

1. Containment penetrations whose design incorporates resilient seals, gaskets, or sealant compounds, piping penetrations fitted with expansion bellows, and electrical penetrations fitted with flexible metal seal assemblies.

2. Air lock door seals, including door operating mechanism penetrations which are part of the containment pressure boundary.

3. Doors with resilient seals or gaskets except for seal-welded doors.

4. Components other than those listed in II.G.1, II.G.2, or II.G.3 which must meet the acceptance criteria in III.B.3.

H. "Type C Tests" means tests intended to measure containment isolation valve leakage rates. The containment isolation valves included are those that:

1. Provide a direct connection between the inside and outside atmospheres of the primary reactor containment under normal operation, such as purge and ventilation, vacuum relief, and instrument valves;

2. Are required to close automatically upon receipt of a containment isolation signal in response to controls intended to effect containment isolation;

3. Are required to operate intermittently under postaccident conditions; and

4. Are in main steam and feedwater piping and other systems which penetrate containment of direct-cycle boiling water power reactors.

I. Pa (p.s.i.g.) means the calculated peak containment internal pressure related to the design basis accident and specified either in the technical specification or associated bases.

J. Pt (p.s.i.g.) means the containment vessel reduced test pressure selected to measure the integrated leakage rate during periodic Type A tests.

K. La (percent/24 hours) means the maximum allowable leakage rate at pressure Pa as specified for preoperational tests in the technical specifications or associated bases, and as specified for periodic tests in the operating license.

38 FR 4385

L. Ld (percent/24 hours) means the design leakage rate at pressure, Pa, as specified in the technical specifications or associated bases.

M. Lt (percent/24 hours) means the maximum allowable leakage rate at pressure Pt derived from the preoperational test data as specified in III.A.4.(a)(iii).

N. Lam, Ltm (percent/24 hours) means the total measured containment leakage rates at pressure Pa and Pt, respectively, obtained from testing the containment with components and systems in the state as close as practical to that which would exist under design basis accident conditions (e.g., vented, drained, flooded or pressurized).

O. "Acceptance criteria" means the standard against which test results are to be compared for establishing the functional acceptability of the containment as a leakage limiting boundary.

III. LEAKAGE TESTING REQUIREMENTS

A program consisting of a schedule for conducting Type A, B, and C tests shall be developed for leak testing the primary reactor containment and related systems and components penetrating primary containment pressure boundary.

Upon completion of construction of the primary reactor containment, including installation of all portions of mechanical, fluid, electrical, and instrumentation systems penetrating the primary reactor containment pressure boundary, and prior to any reactor operating period, preoperational and periodic leakage rate tests, as applicable, shall be conducted in accordance with the following:

A. *Type A test*—1. *Pretest requirements.* (a) Containment inspection in accordance with V.A. shall be performed as a prerequisite to the performance of Type A tests. During the period between the initiation of the containment inspection and the performance of the Type A test, no repairs or adjustments shall be made so that the containment can be tested in as close to the "as is" condition as practical. During the period between the

completion of one Type A test and the initiation of the containment inspection for the subsequent Type A test, repairs or adjustments shall be made to components whose leakage exceeds that specified in the technical specification as soon as practical after identification. If during a Type A test, including the supplemental test specified in III.A.3.(b), potentially excessive leakage paths are identified which will interfere with satisfactory completion of the test, or which result in the Type A test not meeting the acceptance criteria III.A.4.(b) or III.A.5.(b), the Type A test shall be terminated and the leakage through such paths shall be measured using local leakage testing methods. Repairs and/or adjustments to equipment shall be made and a Type A test performed. The corrective action taken and the change in leakage rate determined from the tests and overall integrated leakage determined from the local leak and Type A tests shall be included in the report submitted to the Commission as specified in V.B.

(b) Closure of containment isolation valves for the Type A test shall be accomplished by normal operation and without any preliminary exercising or adjustments (e.g., no tightening of valve after closure by valve motor). Repairs of maloperating or leaking valves shall be made as necessary. Information on any valve closure malfunction or valve leakage that requires corrective action before the test, shall be included in the report submitted to the Commission as specified in V.B.

(c) The containment test conditions shall stabilize for a period of about 4 hours prior to the start of a leakage rate test.

(d) Those portions of the fluid systems that are part of the reactor coolant pressure boundary and are open directly to the containment atmosphere under post-accident conditions and become an extension of the boundary of the containment shall be opened or vented to the containment atmosphere prior to and during the test. Portions of closed systems inside containment that penetrate containment and rupture as a result of a loss of coolant accident shall be vented to the containment atmosphere. All vented systems shall be drained of water or other fluids to the extent necessary to assure exposure of the system containment isolation valves to containment air test pressure and to assure they will be subjected to the post-accident differential pressure. Systems that are required to maintain the plant in a safe condition during the test shall be operable in their normal mode, and need not be vented. Systems that are normally filled with water and operating under post-accident conditions, such as the containment heat removal system, need not be vented. However, the containment isolation valves in the systems defined in III.A.1.(d) shall be tested in accordance with III.C. The measured leakage rate from these tests shall be reported to the Commission.

2. *Conduct of tests.* Preoperational leakage rate tests at either reduced or at peak pressure, shall be conducted at the intervals specified in III.D.

3. *Test methods.* (a) All Type A tests shall be conducted in accordance with the provisions of the American National Standard N45.4–1972, Leakage Rate Testing of Containment Structures for Nuclear Reactors, March 16 1972.[1] The method chosen for the initial test shall normally be used for the periodic tests.

(b) The accuracy of any Type A test shall be verified by a supplemental test. An acceptable method is described in Appendix C of ANSI N45.4–1972. The supplemental test method selected shall be conducted for sufficient duration to establish accurately the change in leakage rate between the Type A and supplemental test. Results from this supplemental test are acceptable provided the difference between the supplemental test data and the Type A test data is within 0.25 La (or 0.25 Lt). If results are not within 0.25 La (or 0.25 Lt), the reason shall be determined, corrective action taken, and a successful supplemental test performed.

(c) Test leakage rates shall be calculated using absolute values corrected for instrument error.

4. *Preoperational leakage rate tests.* (a) *Test pressure*—(1) *Reduced pressure tests.* (i) An initial test shall be performed at a pressure Pt, not less than 0.50 Pa to measure a leakage rate Ltm.

(ii) A second test shall be performed at pressure Pa to measure a leakage rate Lam.

(iii) The leakage characteristics yielded by measurements Ltm and Lam shall establish the maximum allowable test leakage rate Lt not more than La (Ltm/Lam). In the event Ltm/Lam is greater than 0.7, Lt shall be specified as equal to La $(Pt/Pa)^{1/2}$.

(2) *Peak presure tests.* A test shall be performed at pressure Pa to measure the leakage rate Lam.

(b) *Acceptance criteria*—(1) *Reduced pressure tests.* The leakage rate Ltm shall be less than 0.75 Lt.

(2) *Peak pressure tests.* The leakage rate Lam shall be less than 0.75 La and not greater than Ld.

5. *Periodic leakage rate tests*—(a) *Test pressure.* (1) Reduced pressure tests shall be conducted at Pt.;

(2) Peak pressure tests shall be conducted at Pa.

(b) *Acceptance criteria*—(1) *Reduced pressure tests.* The leakage rate Ltm shall be less than 0.75 Lt. If local leakage measurements are taken to effect repairs in order to meet the acceptance criteria, these measurements shall be taken at a test pressure Pt.

(2) *Peak pressure tests.* The leakage rate* Lam shall be less than 0.75 La. If local leakage measurements are taken to effect repairs in order to meet the acceptance criteria, these measurements shall be taken at a test pressure Pa.

6. *Additional Requirements.* (a) If any periodic Type A test fails to meet the applicable acceptance criteria in III.A.5.(b), the test schedule applicable to subsequent Type A tests will be reviewed and approved by the Commission.

(b) If two consecutive periodic Type A tests fail to meet the applicable acceptance criteria in III.A.5(b), notwithstanding the periodic retest schedule of III.D., a Type A test shall be performed at each plant shutdown for refueling or approximately every 18 months, whichever occurs first, until two consecutive Type A tests meet the acceptance criteria in III.A.5(b), after which time the retest schedule specified in III.D. may be resumed.

B. *Type B tests.*

1. *Test methods.* Acceptable means of performing * preoperational and periodic Type B tests include:

(a) Examination by halide leak-detection method (or by other equivalent test methods such as mass spectrometer) of a test chamber, pressurized with air, nitrogen, or pneumatic fluid specified in the technical specifications or associated bases and constructed as part of individual containment penetrations.

(b) Measurement of the rate of pressure loss of the test chamber of the containment penetration pressurized with air, nitrogen, or pneumatic fluid specified in the technical specifications or associated bases.

(c) Leakage surveillance by means of a permanently installed system with provisions for continuous or intermittent pressurization of individual or groups of containment penetrations and measurement of rate of pressure loss of air, nitrogen, or pneumatic fluid specified in the technical specification or associated bases through the leak paths.

2. *Test Pressure.* All preoperational and periodic Type B tests shall be performed by local pneumatic pressurization of the containment penetrations, either individually or in groups, at a pressure not less than Pa.

3. *Acceptance criteria.* (See also Type C tests.) (a) The combined leakage rate of all penetrations and valves subject to Type B and C tests shall be less than 0.60 La, with the exception of the valves specified in III.C.3.

(b) Leakage measurements obtained through component leakage surveillance systems (e.g., continuous pressurization of individual containment components) that maintains a pressure not less than Pa at individual test chambers of containment penetrations during normal reactor operation, are acceptable in lieu of Type B tests.

C. Type C tests.*

1. *Test method.* Type C tests shall be performed by local pressurization. The pressure shall be applied in the same direction as that when the value would be required to perform its safety function, unless it can be determined that the results from the tests for a pressure applied in a different direction will provide equivalent or more conservative results. The test methods in III.B.1 may be substituted where appropriate. Each valve to be tested shall be closed by normal operation and without any preliminary exercising or adjustments (e.g., no tightening of valve after closure by valve motor).

2. *Test pressure.* (a) Valves, unless pressurized with fluid (e.g., water, nitrogen) from a seal system, shall be pressurized with air or nitrogen at a pressure of Pa.

(b) Valves, which are sealed with fluid from a seal system shall be pressurized with that fluid to a pressure not less than 1.10 Pa.

3. *Acceptance criterion.* The combined leakage rate for all penetrations and valves subject to Type B and C tests shall be less than 0.60 La. Leakage from containment isolation valves that are sealed with fluid from a seal system may be excluded when determining the combined leakage rate: *Provided*, That;

(a) Such valves have been demonstrated to have fluid leakage rates that do not exceed those specified in the technical specifications or associated bases, and

(b) The installed isolation valve seal-water system fluid inventory is sufficient to assure the sealing function for at least 30 days at a pressure of 1.10 Pa.

D. *Periodic retest schedule*—1. *Type A test.* (a) After the preoperational leakage rate tests, a set of three Type A tests shall be performed, at approximately equal intervals during each 10-year service period. The third test of each set shall be conducted when the plant is shutdown for the 10-year plant in-service inspections.[2]

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[1] ANSI N45.4–1972 Leakage Rate Testing of Containment Structures for Nuclear Reactors (dated Mar. 16, 1972). Copies may be obtained from the American Nuclear Society, 244 East Ogden Avenue, Hinsdale, IL 60521. A copy is available for inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, DC. The incorporation by reference was approved by the Director of the Federal Register on October 30, 1972.

*Amended 38 FR 5997.

[2] Such inservice inspections are required by § 50.55a.

2. *Type B tests.* (a) Type B tests, except tests for air locks, shall be performed during reactor shutdown for refueling, or other convenient intervals, but in no case at intervals greater than 2 years. If opened following a Type A or B test, containment penetrations subject to Type B testing shall be Type B tested prior to returning the reactor to an operating mode requiring containment integrity. For primary reactor containment penetrations employing a continuous leakage monitoring system, Type B tests, except for tests of air locks, may, notwithstanding the test schedule specified under III.D.1., be performed every other reactor shutdown for refueling but in no case at intervals greater than 3 years.

(b)(i) Air locks shall be tested prior to initial fuel loading and at 6-month intervals thereafter at an internal pressure not less than P_a.

(ii) Air locks opened during periods when containment integrity is not required by the plant's Technical Specifications shall be tested at the end of such periods at not less than P_a.

(iii) Air locks opened during periods when containment integrity is required by the plant's Technical Specifications shall be tested within 3 days after being opened. For air lock doors opened more frequently than once every 3 days, the air lock shall be tested at least once every 3 days during the period of frequent openings. For air lock doors having testable seals, testing the seals fulfills the 3-day test requirements. In the event that the testing for this 3-day interval cannot be at P_a, the test pressure shall be as stated in the Technical Specifications. Air lock door seal testing shall not be substituted for the 6-month test of the entire air lock at not less than P_a.

(iv) The acceptance criteria for air lock testing shall be stated in the Technical Specifications.

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3. *Type C tests.* Type C tests shall be performed during each reactor shutdown for refueling but in no case at intervals greater than 2 years.

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IV. Special Testing Requirements

A. *Containment modification.* Any major modification, replacement of a component which is part of the primary reactor containment boundary, or resealing a seal-welded door, performed after the preoperational leakage rate test shall be followed by either a Type A, Type B, or Type C test, as applicable for the area affected by the modification. The measured leakage from this test shall be included in the report to the Commission, required by V.A. The acceptance criteria of III.A.5.(b), III.B.3., or III.C.3., as appropriate, shall be met. Minor modifications, replacements, or resealing of seal-welded doors, performed directly prior to the conduct of a scheduled Type A test do not require a separate test.

B. *Multiple leakage barrier or subatmospheric containments.* The primary reactor containment barrier of a multiple barrier or subatmospheric containment shall be subjected to Type A tests to verify that its leakage rate meets the requirements of this appendix. Other structures of multiple barrier or subatmospheric containments (e.g., secondary containments for boiling water reactors and shield buildings for pressurized water reactors that enclose the entire primary reactor containment or portions thereof) shall be subject to individual tests in accordance with the procedures specified in the technical specifications, or associated bases.

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V. Inspection and Reporting of Tests

A. *Containment inspection.* A general inspection of the accessible interior and exterior surfaces of the containment structures and components shall be performed prior to any Type A test to uncover any evidence of structural deterioration which may affect either the containment structural integrity or leak-tightness. If there is evidence of structural deterioration, Type A tests shall not be performed until corrective action is taken in accordance with repair procedures, nondestructive examinations, and tests as specified in the applicable code specified in § 50.55a at the commencement of repair work. Such structural deterioration and corrective actions taken shall be reported as part of the test report, submitted in accordance with V.B.

B. *Report of test results.* 1. The preoperational and periodic tests shall be the subject of a summary technical report submitted to the Director of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 approximately 3 months after the conduct of each test. The report shall be titled "Reactor Containment Building Integrated Leak Rate Test."

2. The report on the preoperational test shall include a schematic arrangement of the leakage rate measurement system, the instrumentation used, the supplemental test method, and the test program selected as applicable to the preoperational test, and all subsequent periodic tests. The report shall contain an analysis and interpretation of the leakage rate test data for the Type A test results to the extent necessary to demonstrate the acceptability of the containment's leakage rate in meeting the acceptance criteria.

3. For each periodic test, leakage test results from Type A, B, and C tests shall be reported. The report shall contain an analysis and interpretation of the Type A test results and a summary analysis of periodic Type B and Type C tests that were performed since the last Type A test. Leakage test results from Type A, B, and C tests that failed to meet the acceptance criteria of III.A.5(b), III.B.3, and III.C.3, respectively, shall be reported in a separate accompanying summary report that includes an analysis and interpretation of the test data, the least-squares fit analysis of the test data, the instrumentation error analysis, and the structural conditions of the containment or components, if any, which contributed to the failure in meeting the acceptance criteria. Results and analyses of the supplemental verification test employed to demonstrate the validity of the leakage rate test measurements shall also be included.

* Amended 38 FR 5997

† Amended 41 FR 16445

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Appendix K—ECCS Evaluation Models

I. Required and Acceptable Features of Evaluation Models.

II. Required Documentation.

I. Required and Acceptable Features of the Evaluation Models

A. *Sources of heat during the LOCA.* For the heat sources listed in paragraphs 1 to 4 below it shall be assumed that the reactor has been operating continuously at a power level at least 1.02 times the licensed power level (to allow for such uncertainties as instrumentation error), with the maximum peaking factor allowed by the technical specifications. A range of power distribution shapes and peaking factors representing power distributions that may occur over the core lifetime shall be studied and the one selected should be that which results in the most severe calculated consequences, for the spectrum of postulated breaks and single failures analyzed.

1. *The Initial Stored Energy in the Fuel.* The steady-state temperature distribution and stored energy in the fuel before the hypothetical accident shall be calculated for the burn-up that yields the highest calculated cladding temperature (or, optionally, the highest calculated stored energy.) To accomplish this, the thermal conductivity of the UO_2 shall be evaluated as a function of burn-up and temperature, taking into consideration differences in initial density, and the thermal conductance of the gap between the UO_2 and the cladding shall be evaluated as a function of the burn-up, taking into consideration fuel densification and expansion, the composition and pressure of the gases within the fuel rod, the initial cold gap dimension with its tolerances, and cladding creep.

2. *Fission Heat.* Fission heat shall be calculated using reactivity and reactor kinetics. Shutdown reactivities resulting from temperatures and voids shall be given their minimum plausible values, including allowance for uncertainties, for the range of power distribution shapes and peaking factors indicated to be studied above. Rod trip and insertion may be assumed if they are calculated to occur.

3. *Decay of Actinides.* The heat from the radioactive decay of actinides, including neptunium and plutonium generated during operation, as well as isotopes of uranium, shall be calculated in accordance with fuel cycle calculations and known radioactive properties. The actinide decay heat chosen shall be that appropriate for the time in the fuel cycle that yields the highest calculated fuel temperature during the LOCA.

4. *Fission Product Decay.* The heat generation rates from radioactive decay of fission products shall be assumed to be equal to 1.2 times the values for infinite operating time in the ANS Standard (Proposed American Nuclear Society Standards—"Decay Energy Release Rates Following Shutdown of Uranium-Fueled Thermal Reactors". Approved by Subcommittee ANS-5, ANS Standards Committee, October 1971). The fraction of the locally generated gamma energy that is deposited in the fuel (including the cladding) may be different from 1.0; the value used shall be justified by a suitable calculation.

5. *Metal-Water Reaction Rate.* The rate of energy release, hydrogen generation, and cladding oxidation from the metal/water reaction shall be calculated using the Baker-Just equation (Baker, L., Just, L. C., "Studies of Metal Water Reactions at High Temperatures, III. Experimental and Theoretical Studies of the Zirconium-Water Reac-

tion," ANL-6548, page 7, May 1962). The reaction shall be assumed not to be steam limited. For rods whose cladding is calculated to rupture during the LOCA, the inside of the cladding shall also be assumed to react after the rupture. The calculation of the reaction rate on the inside of the cladding shall also follow the Baker-Just equation, starting at the time when the cladding is calculated to rupture, and extending around the cladding inner circumference and axially no less than 1.5 inches each way from the location of the rupture, with the reaction assumed not to be steam limited.

6. *Reactor Internals Heat Transfer.* Heat transfer from piping, vessel walls, and nonfuel internal hardware shall be taken into account.

7. *Pressurized Water Reactor Primary-to-Secondary Heat Transfer.* Heat transferred between primary and secondary systems through heat exchangers (steam generators) shall be taken into account. (Not applicable to Boiling Water Reactors.)

B. SWELLING AND RUPTURE OF THE CLADDING AND FUEL ROD THERMAL PARAMETERS

Each evaluation model shall include a provision for predicting cladding swelling and rupture from consideration of the axial temperature distribution of the cladding and from the difference in pressure between the inside and outside of the cladding, both as functions of time. To be acceptable the swelling and rupture calculations shall be based on applicable data in such a way that the degree of swelling and incidence of rupture are not underestimated. The degree of swelling and rupture shall be taken into account in calculations of gap conductance, cladding oxidation and embrittlement, and hydrogen generation.

The calculations of fuel and cladding temperatures as a function of time shall use values for gap conductance and other thermal parameters as functions of temperature and other applicable time-dependent variables. The gap conductance shall be varied in accordance with changes in gap dimensions and any other applicable variables.

C. BLOWDOWN PHENOMENA

1. *Break Characteristics and Flow.* a. In analyses of hypothetical loss-of-coolant accidents, a spectrum of possible pipe breaks shall be considered. This spectrum shall include instantaneous double-ended breaks ranging in cross-sectional area up to and including that of the largest pipe in the primary coolant system. The analysis shall also include the effects of longitudinal splits in the largest pipes, with the split area equal to the cross-sectional area of the pipe.

b. *Discharge Model.* For all times after the discharging fluid has been calculated to be two-phase in composition, the discharge rate shall be calculated by use of the Moody model (F. J. Moody, "Maximum Flow Rate of a Single Component, Two-Phase Mixture," *Journal of Heat Transfer, Trans American Society of Mechanical Engineers*, 87, No. 1, February, 1965). The calculation shall be conducted with at least three values of a discharge coefficient applied to the postulated break area, these values spanning the range from 0.6 to 1.0. If the results indicate that the maximum clad temperature for the hypothetical accident is to be found at an even lower value of the discharge coefficient, the range of discharge coefficients shall be extended until the maximum clad temperature calculated by this variation has been achieved.

c. *End of Blowdown.* (Applies Only to Pressurized Water Reactors.) For postulated cold leg breaks, all emergency cooling water injected into the inlet lines or the reactor vessel during the bypass period shall in the calculations be subtracted from the reactor vessel calculated inventory. This may be executed in the calculation during the bypass period, or as an alternative the amount of emergency core cooling water calculated to be injected during the bypass period may be subtracted later in the calculation from the water remaining in the inlet lines, downcomer, and reactor vessel lower plenum after the bypass period. This bypassing shall end in the calculation at a time designated as the "end of bypass," after which the expulsion or entrainment mechanisms responsible for the bypassing are calculated not to be effective. The end-of-bypass definition used in the calculation shall be justified by a suitable combination of analysis and experimental data. Acceptable methods for defining "end of bypass" include, but are not limited to, the following: (1) Prediction of the blowdown calculation of downward flow in the downcomer for the remainder of the blowdown period; (2) Prediction of a threshold for droplet entrainment in the upward velocity, using local fluid conditions and a conservative critical Weber number.

d. *Noding Near the Break and the ECCS Injection Points.* The noding in the vicinity of and including the broken or split sections of pipe and the points of ECCS injection shall be chosen to permit a reliable analysis of the thermodynamic history in these regions during blowdown.

2. *Frictional Pressure Drops.* The frictional losses in pipes and other components including the reactor core shall be calculated using models that include realistic variation of friction factor with Reynolds number, and realistic two-phase friction multipliers that have been adequately verified by comparison with experimental data, or models that prove at least equally conservative with respect to maximum clad temperature calculated during the hypothetical accident. The modified Baroczy correlation (Baroczy, C. J., "A Systematic Correlation for Two-Phase Pressure Drop," *Chem. Enging. Prog. Symp. Series*, No. 64, Vol. 62, 1965) or a combination of the Thom correlation (Thom, J.R.S., "Prediction of Pressure Drop During Forced Circulation Boiling of Water," *Int. J. of Heat & Mass Transfer*, 7, 709-724, 1964) for pressures equal to or greater than 250 psia and the Martinelli-Nelson correlation (Martinelli, R. C. Nelson, D.B., "Prediction of Pressure Drop During Forced Circulation Boiling of Water," *Transactions of ASME*, 695-702, 1948) for pressures lower than 250 psia is acceptable as a basis for calculating realistic two-phase friction multipliers.

3. *Momentum Equation.* The following effects shall be taken into account in the conservation of momentum equation: (1) temporal change of momentum, (2) momentum convection, (3) area change momentum flux, (4) momentum change due to compressibility, (5) pressure loss resulting from wall friction, (6) pressure loss resulting from area change, and (7) gravitational acceleration. Any omission of one or more of these terms under stated circumstances shall be justified by comparative analyses or by experimental data.

4. *Critical Heat Flux.* a. Correlations developed from appropriate steady-state and transient-state experimental data are acceptable for use in predicting the critical heat flux (CHF) during LOCA transients. The computer programs in which these correlations are used shall contain suitable checks to assure that the physical parameters are within the range of parameters specified for use of the correlations by their respective authors.

b. Steady-state CHF correlations acceptable for use in LOCA transients include, but are not limited to, the following:

(1) *W 3.* L. S. Tong, "Prediction of Departure from Nucleate Boiling for an Axially Non-uniform Heat Flux Distribution," *Journal of Nuclear Energy*, Vol. 21, 241-248, 1967.

(2) *B&W-2.* J. S. Gellerstedt, R. A. Lee, W. J. Oberjohn, R. H. Wilson, L. J. Stanek, "Correlation of Critical Heat Flux in a Bundle Cooled by Pressurized Water," *Two-Phase Flow and Heat Transfer in Rod Bundles*, ASME, New York, 1969.

(3) *Hench-Levy.* J. M. Healzer, J. E. Hench, E. Janssen, S. Levy "Design Basis for Critical Heat Flux Condition in Boiling Water Reactors," APED-5186, GE Company Private report, July 1966.

(4) *Macbeth, R. V.* Macbeth, "An Appraisal of Forced Convection Burnout Data," *Proceedings of the Institute of Mechanical Engineers*, 1965-1966.

(5) *Barnett.* P. G. Barnett, "A Correlation of Burnout Data for Uniformly Heated Annuli and Its Uses for Predicting Burnout in Uniformly Heated Rod Bundles," AEEW-R 463, 1966.

(6) *Hughes.* E. D. Hughes, "A Correlation of Rod Bundle Critical Heat Flux for Water in the Pressure Range 150 to 725 psia," IN-1412, Idaho Nuclear Corporation, July 1970.

c. Correlations of appropriate transient CHF data may be accepted for use in LOCA transient analyses if comparisons between the data and the correlations are provided to demonstrate that the correlations predict values of CHF which allow for uncertainty in the experimental data throughout the range of parameters for which the correlations are to be used. Where appropriate, the comparisons shall use statistical uncertainty analysis of the data to demonstrate the conservatism of the transient correlation.

d. Transient CHF correlations acceptable for use in LOCA transients include, but are not limited to, the following:

(1) *GE transient CHF.* B. C. Slifer, J. E. Hench, "Loss-of-Coolant Accident and Emergency Core Cooling Models for General Electric Boiling Water Reactors," NEDO-10329, General Electric Company, Equation C-32, April 1971.

e. After CHF is first predicted at an axial fuel rod location during blowdown, the calculation shall not use nucleate boiling heat transfer correlations at that location subsequently during the blowdown even if the calculated local fluid and surface conditions would apparently justify the reestablishment of nucleate boiling. Heat transfer assumptions characteristic of return to nucleate boiling (rewetting) shall be permitted when justified by the calculated local fluid and surface conditions during the reflood portion of a LOCA.

5. *Post-CHF Heat Transfer Correlations.* a. Correlations of heat transfer from the fuel cladding to the surrounding fluid in the post-CHF regimes of transition and film boiling shall be compared to applicable steady-state and transient-state data using statistical correlation and uncertainty analyses. Such comparison shall demonstrate that the correlations predict values of heat transfer co-efficient equal to or less than the mean value of the applicable experimental heat transfer data throughout the range of parameters for which the correlations are to be used. The comparisons shall quantify the relation of the correlations to the statistical uncertainty of the applicable data.

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b. The Groeneveld flow film boiling correlation (equation 5.7 of D.C. Groeneveld, "An Investigation of Heat Transfer in the Liquid Deficient Regime," AECL-3281, revised December 1969), the Dougall-Rohsenow flow film boiling correlation (R. S. Dougall and W. M. Rohsenow, "Film Boiling on the Inside of Vertical Tubes with Upward Flow of the Fluid at Low Qualities, MIT Report Number 9079-26, Cambridge, Massachusetts, September 1963), and the Westinghouse correlation of steady-state transition boiling ("Proprietary Redirect/Rebuttal Testimony of Westinghouse Electric Corporation," USNRC Docket RM-50-1, page 25-1, October 26, 1972) are acceptable for use in the post-CHF boiling regimes. In addition the transition boiling correlation of McDonough, Milich, and King (J. B. McDonough, W. Milich, E. C. King, "Partial Film Boiling with Water at 2000 psig in a Round Vertical Tube," MSA Research Corp., Technical Report 62 (NP-6976), (1958) is suitable for use between nucelate and film boiling. Use of all these correlations shall be restricted as follows:

(1) The Groeneveld correlation shall not be used in the region near its low-pressure singularity.

(2) The first term (nucleate) of the Westinghouse correlation and the entire McDonough, Milich, and King correlation shall not be used during the blowdown after the temperature difference between the clad and the saturated fluid first exceeds 300° F.

(3) Transition boiling heat transfer shall not be reapplied for the remainder of the LOCA blowdown, even if the clad superheat returns below 300° F, except for the reflood portion of the LOCA when justified by the calculated local fluid and surface conditions.

6. *Pump Modeling.* The characteristics of rotating primary system pumps (axial flow, turbine, or centrifugal) shall be derived from a dynamic model that includes momentum transfer between the fluid and the rotating member, with variable pump speed as a function of time. The pump model resistance used for analysis should be justified. The pump model for the two-phase region shall be verified by applicable two-phase pump performance data. For BWR's after saturation is calculated at the pump suction, the pump head may be assumed to vary linearly with quality, going to zero for one percent quality at the pump suction, so long as the analysis shows that core flow stops before the quality at pump suction reaches one percent.

7. *Core Flow Distribution During Blowdown.* (Applies only to pressurized water reactors.)

a. The flow rate through the hot region of the core during blowdown shall be calculated as a function of time. For the purpose of these calculations the hot region chosen shall not be greater than the size of one fuel assembly. Calculations of average flow and flow in the hot region shall take into account cross flow between regions and any flow blockage calculated to occur during blowdown as a result of cladding swelling or rupture. The calculated flow shall be smoothed to eliminate any calculated rapid oscillations (period less than 0.1 seconds).

b. A method shall be specified for determining the enthalpy to be used as input data to the hot channel heatup analysis from quantities calculated in the blowdown analysis, consistent with the flow distribution calculations.

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D. POST-BLOWDOWN PHENOMENA: HEAT REMOVAL BY THE ECCS

1. *Single Failure Criterion.* An analysis of possible failure modes of ECCS equipment and of their effects on ECCS performance must be made. In carrying out the accident evaluation the combination of ECCS subsystems assumed to be operative shall be those available after the most damaging single failure of ECCS equipment has taken place.

2. *Containment Pressure.* The containment pressure used for evaluating cooling effectiveness during reflood and spray cooling shall not exceed a pressure calculated conservatively for this purpose. The calculation shall include the effects of operation of all installed pressure-reducing systems and processes.

3. *Calculation of Reflood Rate for Pressurized Water Reactors.* The refilling of the reactor vessel and the time and rate of reflooding of the core shall be calculated by an acceptable model that takes into consideration the thermal and hydraulic characteristics of the core and of the reactor system. The primary system coolant pumps shall be assumed to have locked impellers if this assumption leads to the maximum calculated cladding temperature; otherwise the pump rotor shall be assumed to be running free. The ratio of the total fluid flow at the core exit plane to the total liquid flow at the core inlet plane (carryover fraction) shall be used to determine the core exit flow and shall be determined in accordance with applicable experimental data (for example, "PWR FLECHT (Full Length Emergency Cooling Heat Transfer) Final Report," Westinghouse Report WCAP-7665, April 1971; "PWR Full Length Emergency Cooling Heat Transfer (FLECHT) Group I Test Report," Westinghouse Report WCAP-7435, January 1970; "PWR FLECHT (Full Length Emergency Cooling Heat Transfer) Group II Test Report," Westinghouse Report WCAP-7544, September 1970; "PWR FLECHT Final Report Supplement," Westinghouse Report WCAP-7931, October 1972).

The effects on reflooding rate of the compressed gas in the accumulator which is discharged following accumulator water discharge shall also be taken into account.

4. *Steam Interaction with Emergency Core Cooling Water in Pressurized Water Reactors.* The thermal-hydraulic interaction between steam and all emergency core cooling water shall be taken into account in calculating the core reflooding rate. During refill and reflood, the calculated steam flow in unbroken reactor coolant pipes shall be taken to be zero during the time that accumulators are discharging water into those pipes unless experimental evidence is available regarding the realistic thermal-hydraulic interaction between the steam and the liquid. In this case, the experimental data may be used to support an alternate assumption.

5. *Refill and Reflood Heat Transfer for Pressurized Water Reactors.* For reflood rates of one inch per second or higher, reflood heat transfer coefficients shall be based on applicable experimental data for unblocked cores including FLECHT results ("PWR FLECHT (Full Length Emergency Cooling Heat Transfer) Final Report," Westinghouse Report WCAP-7665, April 1971). The use of a correlation derived from FLECHT data shall be demonstrated to be conservative for the transient to which it is applied; presently available FLECHT heat transfer correlations ("PWR Full Length Emergency Cooling Heat Transfer (FLECHT) Group I Test Report," Westinghouse Report WCAP-7544, September 1970; "PWR FLECHT Final Report Supplement," Westinghouse Report WCAP-7931, October 1972) are not acceptable. New correlations or modifications to the FLECHT heat transfer correlations are acceptable only after they are demonstrated to be conservative, by comparison with FLECHT data, for a range of parameters consistent with the transient to which they are applied.

During refill and during reflood when reflood rates are less than one inch per second, heat transfer calculations shall be based on the assumption that cooling is only by steam, and shall take into account any flow blockage calculated to occur as a result of cladding swelling or rupture as such blockage might affect both local steam flow and heat transfer.

6. *Convective Heat Transfer Coefficients for Boiling Water Reactor Fuel Rods Under Spray Cooling.* Following the blowdown period, convective heat transfer shall be calculated using coefficients based on appropriate experimental data. For reactors with jet pumps and having fuel rods in a 7 x 7 fuel assembly array, the following convective coefficients are acceptable:

a. During the period following lower plenum flashing but prior to the core spray reaching rated flow, a convective heat transfer coefficient of zero shall be applied to all fuel rods.

b. During the period after core spray reaches rated flow but prior to reflooding, convective heat transfer coefficients of 3.0, 3.5, 1.5, and 1.5 Btu-hr^{-1}-ft^{-2}F^{-1} shall be applied to the fuel rods in the outer corners, outer row, next to outer row, and to those remaining in the interior, respectively, of the assembly.

c. After the two-phase reflooding fluid reaches the level under consideration, a convective heat transfer coefficient of 25 Btu-hr^{-1}-ft^{-2}F^{-1} shall be applied to all fuel rods.

7. *The Boiling Water Reactor Channel Box Under Spray Cooling.* Following the blowdown period, heat transfer from, and wetting of, the channel box shall be based on appropriate experimental data. For reactors with jet pumps and fuel rods in a 7 x 7 fuel assembly array, the following heat transfer coefficients and wetting time correlation are acceptable.

a. During the period after lower plenum flashing, but prior to core spray reaching rated flow, a convective coefficient of zero shall be applied to the fuel assembly channel box.

b. During the period after core spray reaches rated flow, but prior to wetting of the channel, a convective heat transfer coefficient of 5 Btu-hr^{-1}-ft^{-2}-°F^{-1} shall be applied to both sides of the channel box.

c. Wetting of the channel box shall be assumed to occur 60 seconds after the time determined using the correlation based on the Yamanouchi analysis ("Loss-of-Coolant Accident and Emergency Core Cooling Models for General Electric Boiling Water Reactors," General Electric Company Report NEDO-10329, April 1971).

II. REQUIRED DOCUMENTATION

1. a. A description of each evaluation model shall be furnished. The description shall be sufficiently complete to permit technical review of the analytical approach including the equations used, their approximations in difference form, the assumptions made, and the values of all parameters or the procedure for their selection, as for example, in accordance with a specified physical law or empirical correlation.

b. The description shall be sufficiently detailed and specific to require significant

39 FR 1001

changes in the evaluation model to be specified in amendments of the description. For this purpose, a significant change is a change that would result in a calculated fuel cladding temperature different by more than 20°F from the temperature calculated (as a function of time) for a postulated LOCA using the last previously accepted model.

c. A complete listing of each computer program, in the same form as used in the evaluation model, shall be furnished to the Nuclear Regulatory Commission.

2. For each computer program, solution convergence shall be demonstrated by studies of system modeling or noding and calculational time steps.

3. Appropriate sensitivity studies shall be performed for each evaluation model, to evaluate the effect on the calculated results of variations in noding, phenomena assumed in the calculation to predominate, including pump operation or locking, and values of parameters over their applicable ranges. For items to which results are shown to be sensitive, the choices made shall be justified.

4. To the extent practicable, predictions of the evaluation model, or portions thereof, shall be compared with applicable experimental information.

5. General Standards for Acceptability—Elements of evaluation models reviewed will include technical adequacy of the calculational methods, including compliance with required features of Section I of this Appendix K and provision of a level of safety and margin of conservatism comparable to other acceptable evaluation models, taking into account significant differences in the reactors to which they apply.

39 FR 1001

APPENDIX L—INFORMATION REQUESTED BY THE ATTORNEY GENERAL FOR ANTITRUST REVIEW FACILITY LICENSE APPLICATIONS

43 FR 49775

Introduction. The information in this appendix is that requested by the Attorney General in connection with his review, pursuant to section 105c of the Atomic Energy Act of 1954, as amended, of certain license applications for nuclear power plants. The applicant shall submit the information as a separate document titled, "Information Requested by the Attorney General for Antitrust Review." Twenty (20) copies shall be submitted prior to any other part of the facility license application as provided in § 50.33a and in accordance with § 2.101 of this chapter.

I. DEFINITIONS

44 FR 60715

1. "Applicant" means the entity applying for authority to construct or operate subject unit and each corporate parent, subsidiary and affiliate. Where application is made by two or more electric utilities not under common ownership or control, each utility, subject to the applicable exclusions contained in § 50.33a, should set forth separate responses to each item herein.

38 FR 3955

2. "Subject unit" means the nuclear generating unit or units for which application for construction or operation is being made.

3. "Electric utility" or "system" means any entity owning, controlling or operating facilities for the generation or transmission or distribution of electric power.

4. "Coordination" means any arrangement between two or more systems for generation and transmission planning, or operation of two or more interconnected electric utilities not under common ownership or control, including but not limited to arrangements for sharing operating and installed reserves, arrangements for joint or staggered construction of generating facilities, economy energy transactions, capacity transactions based on load diversities, thermalhydro generation pooling, common maintenance arrangements, and joint use of transmission facilities or wheeling.

38 FR 3955

5. "Coordinating power and energy" means energy transmitted in accordance with an arrangement for coordination including but not limited to emergency power, economy energy, deficiency power and associated energy, and maintenance power and energy.

6. Except where specifically mentioned otherwise, the term "reserve generating capacity" or "reserves" shall refer to installed reserves in contrast to spinning or operating reserves.

II. REQUIRED INFORMATION

1. State separately for hydroelectric and thermal generating resources applicant's most recent peak load and dependable capacity for the same time period. State applicant's dependable capacity at time of system peak for each of the next 10 years for which information is available. Identify each new unit or resource. For hydroelectric generating capacity, indicate the number of kilowatt hours of use associated with each kilowatt of capacity during the "adverse water year" upon which dependable capacity is based. Indicate average annual kilowatt hour loads per kilowatt, associated with each system peak shown (exclusive of interchange arrangements).

2. State applicant's estimated annual load growth for each of the next 20 years or for the period applicant utilizes in system planning. Indicate growth both in kilowatt requirements and kilowatt hour requirements.

3. State estimated annual load growth in kilowatts and kilowatt hours of companies or pools upon which the economic justification of the subject unit is based for each of the next 20 years or for the period applicant utilized in system planning. Identify each company or pool member.

38 FR 3955

4. For the year the subject unit would first come on line, state estimated annual load growth in kilowatts and kilowatt hours of any coordinating group or pool of which the applicant is a member (other than the coordinating group or pool referred to in the applicant's response to item 3) which has generating and/or transmission planning functions. Identify each company or pool member whose loads are indicated in the response thereto.

5. State applicant's minimum installed reserve criterion (as a percentage of load) [1] for the period when the subject unit will first come on line. If the applicant shares reserves with other systems, identify the other systems and provide minimum installed reserve criterion (as a percentage of loan) [1] by contracting parties or pool for the period when the proposed unit will first come on line.

6. Describe methods used as a basis to establish, or as a guide in establishing the criteria for applicant's and/or applicant's pool's minimum amount of installed reserves (e.g., (a) single largest unit down, (b) probability methods such as loss of load one day in 20 years, loss of capacity once in 5 years, (c) other methods and/or (d) judgment. List contingencies other than risk of forced outage that enter into the determination).

7. Indicate whether applicant's system interconnections are credited explicitly or implicitly in establishing applicant's installed reserves.

38 FR 3955

8. List rights to receive emergency power and obligations to deliver emergency power, rights or obligations to receive or deliver deficiency power or unit power, or other coordinating arrangements, by reference to applicant's Federal Power Commission (FPC) rate schedules (i.e., ABC Power & Light Co., FPC Rate Schedule No. 15 including supplements 1-5), [2] and also by reference to applicant's state commission filings. Where documents are not on file with the FPC, supply copies, or where not reduced to writing, describe arrangements. Identify for each such arrangement the participating parties other than applicant. Provide one line electrical and geographic diagrams of coordinating groups or power pools (with generation or transmission planning functions) of which applicant's generation and transmission facilities constitute a part.

39 FR 34394

9. List, and provide the mailing address for non-affiliated electric utility systems with peak loads smaller than applicant's which serve either at wholesale or at retail adjacent to areas served by the applicant.

Provide a geographic one line diagram of applicant's generating and transmission facilities (including subtransmission) indicating the location of adjacent systems and as to such systems indicate (if available) their load, their annual load growth, their generating capacity, their largest thermal generating unit size, and their minimum reserve criteria.

10. List separately those systems in Item 9 which purchase from applicant (a) all bulk power supply and (b) systems which purchase partial bulk power supply requirements. Where information is available to applicant, identify those Item 9 systems purchasing part or all of their bulk power supply requirements from suppliers other than applicant.

38 FR 3955

11. State as to all power generated and sold by applicant the most recent average cost of bulk power supply experienced by applicant (a) at site of generating facilities, (b) at the delivery points from the primary transmission (backbone) system, (c) at delivery points from the secondary transmission system, and (d) at delivery points from the distribution system, in terms of dollars per kilowatt per year, in mills per kilowatt hour, and in both the kilowatt costs and kilowatt hour costs divided by the kilowatt hours. If wholesale sales are made at varying voltages, indicate average costs at each voltage.

12. State (a) for generating facilities and (b) for transmission sub-divided by voltage classes, the most recent estimated cost of applicant's bulk power supply expansion program of which the subject unit is a part, in terms of dollars per kilowatt per year, in mills per kilowatt hour and in both the kilowatt costs and kilowatt hour costs divided by the kilowatt hours. Also state separately the most recently estimated cost of the subject unit(s).

13. List and describe all requests for, or indications of interest in, interconnection and/or coordination and purchases or sales of coordinating power and energy from adjacent utilities listed in item 9 since 1960 and state applicant's response thereto. List and describe all requests for, or indications of interest in, supply of full or partial requirements of bulk power for the same period and state applicant's response thereto.

14. List (a) agreements to which applicant is a party (reproducing relevant paragraphs) and (b) State laws (supply citations only) which restrict or preclude coordination by, with, between, or among any electric utilities or systems identified in applicant's response to items 8 and 9. List (a) agreements

[1] Indicate whether loads other than peak loads are considered.

[2] List separately and identify certificates of concurrence.

to which the applicant is a party (reproducing relevant paragraphs) and (b) State laws (supply citations only) which restrict or preclude substitution of service or establishment of service of full or partial bulk power supply requirements by an electric utility other than applicant to systems identified in items 8 and 9. Where the contract provision appears in contracts or rate schedules on file with a Federal agency, identify each in the same form as in previous responses. Where the contract has not been filed with a Federal agency, a copy should be supplied unless it has been supplied pursuant to another item hereto. Where it is not in writing, it should be described.

15. State, at point of delivery, average future costs of power purchased from applicant to adjacent systems identified in applicant's response to item 9 in terms of dollars/month/kw for capacity, mills/kw for energy and mills/kwh for both power and energy at purchaser's present load factor (a) at present load, (b) at 50 percent increase over present load, (c) at 100 percent increase over present load, and (d) at 200 percent increase over present load. (All costs should be determined under present rate schedules.) Where sales are made under contracts or rate schedules on file with a Federal agency and not included in the response to item 9, identify each in the same form as in previous responses. Where the contract has not been filed with a Federal agency, a copy should be supplied.

16. State whether applicant has prepared, caused to be prepared, or received engineering studies for generation and transmission expansion programs which include loads of each system in item 9.

17. List adjacent systems to which applicant has offered to sponsor or to conduct system surveys in contemplation of an offer by applicant to purchase, merge or consolidate with said adjacent system, subsequent to January 1, 1960.

18. List applicant's offers or proposals to purchase, merge or consolidate with electric utilities, subsequent to January 1, 1960.

19. List all acquisitions of or mergers or consolidations with electric utilities by applicant, subsequent to January 1, 1960, including:

(a) The name and principal place of business of the system prior to the acquisition, merger or consolidation;

(b) The date the acquisition merger or consolidation was consummated;

(c) Gross annual revenue and most recent peak load, dependable capacity and the largest thermal generating unit of the system, prior to the dates of consummation.

20. State applicant's six (or fewer if there are not six) lowest industrial or large commercial rates for firm electric power supply in terms of cost for power and energy in mills per kilowatt hour (and separately, the demand and energy components) and indicate the portion of the charge attributed to bulk power supply. State the rates or rate blocks applicant utilizes for its six (or fewer if there are not six) promotional services such as electric space heating, electric hot water heating, and the like, in terms of mills per kilowatt hour for power and energy and indicate the portion of the rate or rate blocks attributed to bulk power supply.

38 FR 3955

APPENDIX M—STANDARDIZATION OF DESIGN; MANUFACTURE OF NUCLEAR POWER REACTORS; CONSTRUCTION AND OPERATION OF NUCLEAR POWER REACTORS MANUFACTURED PURSUANT TO COMMISSION LICENSE

Section 101 of the Atomic Energy Act of 1954, as amended, and § 50.10 require a Commission license to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import, or export any production or utilization facility. The regulations in the part require the issuance of a construction permit by the Commission before commencement of construction of a production or utilization facility, and the issuance of an operating license before operation of the facility. The provisions of this part relating to the facility licensing process are, in general, predicated on the assumption that the facility will be assembled and constructed on the site at which it is to be operated. In those circumstances, both facility design and site-related issues can be considered in the initial, construction permit stage of the licensing process.

However, under the Atomic Energy Act, a license may be sought and issued authorizing the manufacture of facilities but not their construction and installation at the sites on which the facilities are to be operated. Prior to the "commencement of construction", as defined in § 50.10(c), of a facility (manufactured pursuant to such a Commission license) on the site at which it is to operate—that is preparation of the site and installation of the facility—a construction permit that, among other things, reflects approval of the site on which the facility is to be operated, must be issued by the Commission. This appendix sets out the particular requirements and provisions applicable to such situations where nuclear power reactors to be manufactured pursuant to a Commission license and subsequently installed at the site pursuant to a Commission construction permit, are of the type described in § 50.22. It thus codifies one approach to the standardization of nuclear power reactors.

36 FR 30251

1. Except as otherwise specified in this appendix or as the context otherwise indicates, the provisions in this part applicable to construction permits, including the requirement in § 50.58 for review of the application by the Advisory Committee on Reactor Safeguards and the holding of a public hearing, apply in context, with respect to matters of radiological health and safety, environmental protection, and the common defense and security, to licenses pursuant to this Appendix M to manufacture nuclear power reactors (manufacturing licenses) to be operated at sites not identified in the license application.

2. An application for a manufacturing license pursuant to this Appendix M shall meet all the requirements of §§ 50.34(a)(1)-(9) and 50.34a (a) and (b), except that the preliminary safety analysis report shall be designated as a "design report" and any required information or analyses relating to site matters shall be predicated on postulated site parameters which shall be specified in the application. Such application shall also include information pertaining to design features of the proposed reactor(s) that affect plans for coping with emergencies in the operation of the reactor(s).

49 FR 9352

3. An applicant for a manufacturing license pursuant to this Appendix M shall submit with his application an environmental report as required of applicants for construction permits in accordance with Subpart A of Part 51 of this chapter, provided, however, that such report shall be directed at the manufacture of the reactor(s) at the manufacturing site; and, in general terms, at the construction and operation of the reactor(s) at an hypothetical site or sites having characteristics that fall within the postulated site parameters. The related draft and final environmental impact statement prepared by the Commission's regulatory staff will be similarly directed.

49 FR 9352

28 FR 30251

4. (a) Sections 50.10 (b) and (c), 50.12(b), 50.23, 50.30(d), 50.34(a)(10), 50.34a(c), 50.35 (a) and (c), 50.40(a), 50.45, 50.55(d), 50.56, and Appendix J do not apply to manufacturing licenses. Appendices E and H apply to manufacturing licenses only to the extent that the requirements of these appendixes involve facility design features.

50 FR 18852

≫(b) The financial information submitted pursuant to § 50.33(f) and Appendix C shall be directed at a demonstration of the financial qualifications of the applicant for the manufacturing license to carry out the manufacturing activity for which the license is sought.

38 FR 30251

5. The Commission may issue a license to manufacture one or more nuclear power reactors to be operated at sites not identified in the license application if the Commission finds that:

(a) The applicant has described the proposed design of and the site parameters postulated for the reactor(s), including, but not limited to, the principal architectural and engineering criteria for the design, and has identified the major features or components incorporated therein for the protection of the health and safety of the public.

(b) Such further technical or design information as may be required to complete the design report and which can reasonably be left for later consideration, will be supplied in a supplement to the design report.

(c) Safety features or components, if any, which require research and development have been described by the applicant and the applicant has identified, and there will be conducted a research and development program reasonably designed to resolve any safety questions associated with such features or components; and

(d) On the basis of the foregoing, there is reasonable assurance that (i) such safety questions will be satisfactorily resolved before any of the proposed nuclear power reactor(s) are removed from the manufacturing site and (ii) taking into consideration the site criteria contained in Part 100 of this chapter, the proposed reactor(s) can be constructed and operated at sites having characteristics that fall within the site parameters postulated for the design of the reactor(s) without undue risk to the health and safety of the public.

(e) The applicant is technically and financially qualified to design and manufacture the proposed nuclear power reactor(s).

(f) The issuance of a license to the applicant will not be inimical to the common defense and security or to the health and safety of the public.

49 FR 9352

(g) On the basis of the evaluations and analyses of the environmental effects of the proposed action required by subpart A of Part 51 of this chapter and paragraph 3 of this Appendix, the action called for is the issuance of the license.

Note.—When an applicant has supplied initially all of the technical information required to complete the application, including the final design of the reactor(s), the findings required for the issuance of the license will be appropriately modified to reflect that fact.

6. Each manufacturing license issued pursuant to this appendix will specify the number of nuclear power reactors authorized to be manufactured and the latest date for the completion of the manufacture of all such reactors. Upon good cause shown, the Commission will extend such completion date for a reasonable period of time.

7. The holder of a manufacturing license issued pursuant to this Appendix M shall submit to the Commission the final design of the nuclear power reactor(s) covered by the license as soon as such design has been completed. Such submittal shall be in the form of an application for amendment of the manufacturing license.

8. The prohibition in § 50.10(c) against commencement of construction of a production or utilization facility prior to issuance of a construction permit applies to the transport of a nuclear power reactor(s) manufactured pursuant to a license issued pursuant to this appendix from the manufacturing facility to the site at which the reactor(s) will be installed and operated. In addition, such nuclear power reactor(s) shall not be removed from the manufacturing site until the final design of the reactor(s) has been approved by the Commission in accordance with paragraph 7.

9. An application for a permit to construct a nuclear power reactor(s) which is the subject of an application for a manufacturing license pursuant to this Appendix M need not contain such information or analyses as have previously been submitted to the Commission in connection with the application for a manufacturing license, but shall contain, in addition to the information and analyses otherwise required by §§ 50.34(a) and 50.34a, sufficient information to demonstrate that the site on which the reactor(s) is to be operated falls within the postulated site parameters specified in the relevant manufacturing license application.

10. The Commission may issue a permit to construct a nuclear power reactor(s) which is the subject of an application for a manufacturing license pursuant to this Appendix M if the Commission (a) finds that the site on which the reactor is to be operated falls within the postulated site parameters specified in the relevant application for a manufacturing license and (b) makes the findings otherwise required by this part. In no event will a construction permit be issued until the relevant manufacturing license has been issued.

11. An operating license for a nuclear power reactor(s) that has been manufactured under a Commission license issued pursuant to this Appendix M may be issued by the Commission pursuant to § 50.57 and Subpart A of Part 51 of this chapter except that the Commission shall find, pursuant to § 50.57(a)(1), that construction of the reactor(s) has been substantially completed in conformity with both the manufacturing license and the construction permit and the applications therefor, as amended, and the provisions of the Act, and the rules and regulations of the Commission. Notwithstanding the other provisions of this paragraph, no application for an operating license for a nuclear power reactor(s) that has been manufactured under a Commission license issued pursuant to this Appendix M will be docketed until the application for an amendment to the relevant manufacturing license required by paragraph 7 has been docketed.

12. In making the findings required by this part for the issuance of a construction permit or an operating license for a nuclear power reactor(s) that has been manufactured under a Commission license issued pursuant to this appendix, or an amendment to such a manufacturing license, construction permit, or operating license, the Commission will treat as resolved those matters which have been resolved at an earlier stage of the licensing process, unless there exists significant new information that substantially affects the conclusion(s) reached at the earlier stage or other good cause.

APPENDIX N—STANDARDIZATION OF NUCLEAR POWER PLANT DESIGNS: LICENSES TO CONSTRUCT AND OPERATE NUCLEAR POWER REACTORS OR DUPLICATE DESIGN AT MULTIPLE SITES

Section 101 of the Atomic Energy Act of 1954, as amended, and § 50.10 of this part require a Commission license to transfer or receive in interstate commerce, manufacture, produce, transfer, acquire, possess, use, import or export any production or utilization facility. The regulations in this part require the issuance of a construction permit by the Commission before commencement of construction of a production or utilization facility, except as provided in § 50.10(e), and the issuance of an operating license before operation of the facility.

The Commission's regulations in Part 2 of this chapter specifically provide for the holding of hearings on particular issues separately from other issues involved in hearings in licensing proceedings (§ 2.761a, Appendix A, section I(c)), and for the consolidation of adjudicatory proceedings and of the presentations of parties in adjudicatory proceedings such as licensing proceedings (§§ 2.715a, 2.716).

This Appendix sets out the particular requirements and provisions applicable to situations in which applications are filed by one or more applicants for licenses to construct and operate nuclear power reactors of essentially the same design to be located at different sites.[1]

1. Except as otherwise specified in this Appendix or as the context otherwise indicates, the provisions of this part applicable to construction permits and operating licenses, including the requirement in § 50.58 for review of the application by the Advisory Committee on Reactor Safeguards and the holding of public hearings, apply to construction permits and operating licenses subject to this Appendix N.

2. Applications for construction permits submitted pursuant to this Appendix N shall include the information required by §§ 50.33, 50.33a, 50.34(a) and 50.34a (a) and (b). The applicant shall also submit the information required by § 51.50 of this chapter.

For the technical information required by

[1] If the design for the power reactor(s) proposed in a particular application is not identical to the others, that application may not be processed under this appendix and Subpart D of Part 2 of this chapter.

49 FR 9352

§§ 50.34(a) (1)–(5) and (8) and 50.34a (a) and (b), reference may be made to a single preliminary safety analysis of the design[3] which, for the purposes of § 50.34(a)(1) includes one set of site parameters postulated for the design of the reactors, and an analysis and evaluation of the reactors in terms of such postulated site parameters. Such single preliminary safety analysis shall also include information pertaining to design features of the proposed reactors that affect plans for coping with emergencies in the operation of the reactors, and shall describe the quality assurance program with respect to aspects of design, fabrication, procurement and construction that are common to all of the reactors.

3. Applications for operating licenses submitted pursuant to this Appendix N shall include the information required by §§ 50.33, 50.34(b) and (c), and 50.34a(c). The applicant shall also submit the information required by § 51.53 of this chapter. For the technical information required by §§ 50.34(b)(2)–(5) and 50.34a(c), reference may be made to a single final safety analysis of the design.

APPENDIX O—STANDARDIZATION OF DESIGN; STAFF REVIEW OF STANDARD DESIGNS

This appendix sets out procedures for the filing, staff review and referral to the Advisory Committee on Reactor Safeguards of standard designs for a nuclear power reactor of the type described in § 50.22 or major portions thereof.

1. Any person may submit a proposed preliminary or final standard design for a nuclear power reactor of the type described in § 50.22 to the regulatory staff for its review. Such a submittal may consist of either the preliminary or final design for the entire reactor facility or the preliminary or final design of major portions thereof.

2. The submittal for review of the standard design shall be made in the same manner and in the same number of copies as provided in § 50.30(a), (c)(1) and (3) for license applications.

40 FR 2976

3. The submittal for review of the standard design shall include the information described in § 50.33(a)-(d) and the applicable technical information required by §§ 50.34(a) and (b), as appropriate, and 50.34a (other than that required by §§ 50.34(a)(6) and (10), 50.34(b)(1), (6)(i), (ii), (iv), and (v) and 50.34(b)(7) and (8)). The submital shall also include a description, analysis and evaluation of the interfaces between the submitted design and the balance of the nuclear power plant. With respect to the requirements of §§ 50.34(a)(1), the submittal for review of a standard design shall include the site parameters postulated for the design, and an analysis and evaluation of the design in terms of such postulated site parameters. The information submitted pursuant to § 50.34(a)(7) shall be limited to the quality assurance program to be applied to the design, procurement and fabrication fo the structures, systems, and components for which design review has been requested and the information submitted pursuant to § 50.34(a)(9) shall be limited to the qualifications of the person submitting the standard design to design the reactor or major portion thereof. The submittal shall also include information pertaining to design features that affect plans for coping with emergencies in the operation of the reactor or major portion thereof.

4. Once the regulatory staff has initiated a technical review of a submittal under this Appendix, the submittal will be referred to the Advisory Committee on Reactor Safeguards (ACRS) for a review and report.

5. Upon completion of their review of a submittal under this Appendix, the regulatory staff shall publish in the FEDERAL REGISTER a determination as to whether or not the preliminary or final design is acceptable, subject to such conditions as may be appropriate, and make available in the Public Document Room an analysis of the design in the form of a report. An approved design shall be utilized by and relied upon by the regulatory staff and the ACRS in their review of any individual facility license application, which incorporates by reference a design approved in accordance with this paragraph unless there exists significant new information which substantially affects the earlier determination or other good cause.

40 FR 2976

6. The determination and report by the regulatory staff shall not constitute a commitment to issue a permit or license, or in any way affect the authority of the Commission, Atomic Safety and Licensing Appeal Board, atomic safety and licensing boards, and other presiding officers in any proceeding under Subpart G of Part 2 of this chapter.

7. The Commission may, on its own initiative or in response to a petition for rule making, approve the design in a rule making proceeding and in that event, the approved design will be subject to challenge only as provided in § 2.758 of this chapter. An environmental impact statement may be prepared for such a rule making action in accordance with §§ 51.20(b)(13) and 51.85 of this chapter. If an environmental impact statement is prepared, the Commission may require the petitioner for rule making to submit information to the Commission to aid the Commission in the preparation of the environmental impact statement.

[3] As used in this Appendix, the design of a nuclear power reactor included in a single referenced safety analysis report means the design of those structures, systems and components important to radiological health and safety and the common defense and security.

Appendix Q—Pre-Application Early Review of Site Suitability Issues

49 FR 9352

This appendix sets out procedures for the filing, Staff review, and referral to the Advisory Committee on Reactor Safeguards of requests for early review of one or more site suitability issues relating to the construction and operation of certain utilization facilities separately from and prior to the submittal of applications for construction permits for the facilities. The appendix also sets out procedures for the preparation and issuance of Staff Site Reports and for their incorporation by reference in applications for the construction and operation of certain utilization facilities. The utilization facilities are those which are subject to § 51.20(b) of this chapter and are of the type specified in § 50.21(b) (2) or (3) or § 50.22 or are testing facilities. This appendix does not apply to proceedings conducted pursuant to Subpart F of Part 2 of this chapter

42 FR 22882

1. Any person may submit information regarding one or more site suitability issues to the Commission's Staff for its review separately from and prior to an application for a construction permit for a facility. Such a submittal shall be accompanied by any fee required by Part 170 of this chapter and shall consist of the portion of the information required of applicants for construction permits by §§ 50.33(a)-(c) and (e), and, insofar as it relates to the issue(s) of site suitability for which early review is sought, by §§ 50.34(a)(1) and 50.30(f), except that information with respect to operation of the facility at the projected initial power level need not be supplied.

2. The submittal for early review of site suitability issue(s) shall be made in the same manner and in the same number of copies as provided in § 50.30(a), (c)(1) and (c)(3) for license applications. The submittal shall include sufficient information concerning a range of postulated facility design and operation parameters to enable the Staff to perform the requested review of site suitability issues. The submittal shall contain suggested conclusions on the issues of site suitability submitted for review and shall be accompanied by a statement of the bases or the reasons for those conclusions. The submittal shall also list, to the extent possible, any long, range objectives for ultimate development of the site, state whether any site selection process was used in preparing the submittal, describe any site selection process used, and explain what consideration, if any, was given to alternative sites.

3. The Staff shall publish a notice of docketing of the submittal in the FEDERAL REGISTER, and shall send a copy of the notice of docketing to the Governor or other appropriate official of the State in which the site is located. This notice shall identify the location of the site, briefly describe the site suitability issue(s) under review, and invite commends from Federal, State, and local agencies and interested persons within 120 days of publication or such other time as may be specified, for consideration by the staff in connection with the initiation or outcome of the review and, if appropriate by the ACRS, in connection with the outcome of their review. The person requesting review shall serve a copy of the submittal on the Governor or other appropriate official of the State in which the site is located, and on the chief executive of the municipality in which the site is located or, if the site is not located in a municipality, on the chief executive of the county. The portion of the submittal containing information required of applicants for construction permits by §§ 50.33(a)-(c) and (e) and 50.34(a)(1) will be referred to the Advisory Committee on Reactor Safeguards (ACRS) for a review and report. There will be no referral to the ACRS unless early review of the site safety issues under § 50.34(a)(1) is requested.

4. Upon completion of review by the staff and, if appropriate by the ACRS, of a submittal under this appendix, the staff shall prepare a Staff Site Report which shall identify the location of the site, state the site suitability issues reviewed, explain the nature and scope of the review, state the conclusions of the staff regarding the issues reviewed and state the reasons for those conclusions. Upon issuance of a Staff Site Report, the Staff shall publish a notice of the availability of the report in the FEDERAL REGISTER and shall place copies of the report in the Commission's Public Document Room at 1717 H Street, NW, Washington, D.C. 20555, and in a local Public Document Room(s) located near the site identified in the Staff Site Report. The Staff shall also send a copy of the report to the Governor or other appropriate official of the State in which the site is located, and to the chief executive of the municipality in which the site is located or, if the site is not located in a municipality, to the chief executive of the county.

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5. Any Staff Site Report prepared and issued in accordance with this appendix may be incorporated by reference, as appropriate, in an application for a construction permit for a utilization facility which is subject to § 51.20(b) of this chapter and is of the type specified in §§ 50.21(b) (2) or (3) or 50.22 of this chapter or is a testing facility. The conclusions of the Staff Site Report will be reexamined by the staff where five years or more have elapsed between the issuance of the Staff Site Report and its incorporation by reference in a construction permit application.

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6. Issuance of a Staff Site Report shall not constitite a commitment to issue a permit or license, to permit on-site work under § 50.10(e), or in any way affect the authority of the Commission, Atomic Safety and Licensing Appeal Board, Atomic Safety and Licensing Boards, and other presiding officers in any proceeding under Subpart F and/or G of Part 2 of this chapter.

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7. The staff will not conduct more than one review of site suitability issues with regard to a particular site prior to the full construction permit review required by Subpart A of Part 51 of this chapter. The staff may decline to prepare and issue a Staff Site Report in response to a submittal under this Appendix where it appears that, (a) in cases where no review of the relative merits of the submitted site and alternative sites under Subpart A of Part 51 of this chapter is requested, there is a reasonable likelihood that further Staff review would identify one or more preferable alternative sites and the Staff review of one or more site suitability issues would lead to an irreversible and irretrievable commitment of resources prior to the submittal of the analysis of alternative sites in the Environmental Report that would prejudice the later review and decision on alternative sites under Subpart F and/or G of Part 2 and Subpart A of Part 51 of this chapter; or (b) in cases where, in the judgment of the Staff, early review of any site suitability issue or issues would not be in the public interest, considering (1) the degree of likelihood that any early findings on those issues would retain their validity in later reviews, (2) the objections, if any, of cognizant state or local government agencies to the conduct of an early review on those issues, and (3) the possible effect on the public interest of having an early, if not necessarily conclusive, resolution of those issues.

APPENDIX R—FIRE PROTECTION PROGRAM FOR NUCLEAR POWER FACILITIES OPERATING PRIOR TO JANUARY 1, 1979

I. INTRODUCTION AND SCOPE

This appendix applies to licensed nuclear power electric generating stations that were operating prior to January 1, 1979, except to the extent set forth in § 50.48(b) of this part. With respect to certain generic issues for such facilities it sets forth fire protection features required to satisfy Criterion 3 of Appendix A to this part.[1]

Criterion 3 of Appendix A to this part specifies that "Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions."

When considering the effects of fire, those systems associated with achieving and maintaining safe shutdown conditions assume major importance to safety because damage to them can lead to core damage resulting from loss of coolant through boiloff.

The phrases "important to safety," or "safety-related," will be used throughout this Appendix R as applying to all safety functions. The phrase "safe shutdown" will be used throughout this appendix as applying to both hot and cold shutdown functions.

Because fire may affect safe shutdown systems and because the loss of function of systems used to mitigate the consequences of design basis accidents under postfire conditions does not per se impact public safety, the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of design basis accidents. Three levels of fire damage limits are established according to the safety functions of the structure, system, or component:

Safety function	Fire damage limits
Hot Shutdown	One train of equipment necessary to achieve hot shutdown from either the control room or emergency control station(s) must be maintained free of fire damage by a single fire, including an exposure fire.[1]
Cold Shutdown	Both trains of equipment necessary to achieve cold shutdown may be damaged by a single fire, including an exposure fire, but damage must be limited so that at least one train can be repaired or made operable within 72 hours using onsite capability.
Design Basis Accidents	Both trains of equipment necessary for mitigation of consequences following design basis accidents may be damaged by a single exposure fire.

[1] *Exposure Fire.* An exposure fire is a fire in a given area that involves either in situ or transient combustibles and is external to any structures, systems, or components located in or adjacent to that same area. The effects of such fire (e.g., smoke, heat, or ignition) can adversely affect those structures, systems, or components important to safety. Thus, a fire involving one train of safe shutdown equipment may constitute an exposure fire for the redundant train located in the same area, and a fire involving combustibles other than either redundant train may constitute an exposure fire to both redundant trains located in the same area.

The most stringent fire damage limit shall apply for those systems that fall into more than one category. Redundant systems used to mitigate the consequences of other design basis accidents but not necessary for safe shutdown may be lost to a single exposure fire. However, protection shall be provided so that a fire within only one such system will not damage the redundant system.

II. GENERAL REQUIREMENTS

A. *Fire protection program.* A fire protection program shall be established at each nuclear power plant. The program shall establish the fire protection policy for the protection of structures, systems, and components important to safety at each plant and the procedures, equipment, and personnel required to implement the program at the plant site.

The fire protection program shall be under the direction of an individual who has been delegated authority commensurate with the responsibilities of the position and who has available staff personnel knowledgeable in both fire protection and nuclear safety.

The fire protection program shall extend the concept of defense-in-depth to fire protection in fire areas important to safety, with the following objectives:

- to prevent fires from starting;
- to detect rapidly, control, and extinguish promptly those fires that do occur;
- to provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant.

B. *Fire hazards analysis.* A fire hazards analysis shall be performed by qualified fire protection and reactor systems engineers to (1) consider potential in situ and transient fire hazards; (2) determine the consequences of fire in any location in the plant on the ability to safely shut down the reactor or on the ability to minimize and control the release of radioactivity to the environment; and (3) specify measures for fire prevention, fire detection, fire suppression, and fire containment and alternative shutdown capability as required for each fire area containing structures, systems, and components important to safety in accordance with NRC guidelines and regulations.

C. *Fire prevention features.* Fire protection features shall meet the following general requirements for all fire areas that contain or present a fire hazard to structures, systems, or components important to safety.

1. In situ fire hazards shall be identified and suitable protection provided.

2. Transient fire hazards associated with normal operation, maintenance, repair, or modification activities shall be identified and eliminated where possible. Those transient fire hazards that can not be eliminated shall be controlled and suitable protection provided.

3. Fire detection systems, portable extinguishers, and standpipe and hose stations shall be installed.

4. Fire barriers or automatic suppression systems or both shall be installed as necessary to protect redundant systems or components necessary for safe shutdown.

5. A site fire brigade shall be established, trained, and equipped and shall be on site at all times.

6. Fire detection and suppression systems shall be designed, installed, maintained, and tested by personnel properly qualified by experience and training in fire protection systems.

7. Surveillance procedures shall be established to ensure that fire barriers are in place and that fire suppression systems and components are operable.

D. *Alternative or dedicated shutdown capability.* In areas where the fire protection features cannot ensure safe shutdown capability in the event of a fire in that area, alternative or dedicated safe shutdown capability shall be provided.

III. SPECIFIC REQUIREMENTS

A. *Water supplies for fire suppression systems.* Two separate water supplies shall be provided to furnish necessary water volume and pressure to the fire main loop.

Each supply shall consist of a storage tank, pump, piping, and appropriate isolation and control valves. Two separate redundant suctions in one or more intake structures from a large body of water (river, lake, etc.) will satisfy the requirement for two separated water storage tanks. These supplies shall be separated so that a failure of one supply will not result in a failure of the other supply.

Each supply of the fire water distribution system shall be capable of providing for a period of 2 hours the maximum expected water demands as determined by the fire hazards analysis for safety-related areas or other areas that present a fire exposure hazard to safety-related areas.

When storage tanks are used for combined service-water/fire-water uses the minimum volume for fire uses shall be ensured by means of dedicated tanks or by some physical means such as a vertical standpipe for other water service. Administrative controls, including locks for tank outlet valves, are unacceptable as the only means to ensure minimum water volume.

Other water systems used as one of the two fire water supplies shall be permanently connected to the fire main system and shall be capable of automatic alignment to the fire main system. Pumps, controls, and power supplies in these systems shall satisfy the requirements for the main fire pumps. The use of other water systems for fire protection shall not be incompatible with their functions required for safe plant shutdown. Failure of the other system shall not degrade the fire main system.

B. *Sectional isolation valves.* Sectional isolation valves such as post indicator valves or key operated valves shall be installed in the fire main loop to permit isolation of por-

[1] Clarification and guidance with respect to permissible alternatives to satisfy Appendix A to BTP APCSB 9.5-1 has been provided in four other NRC documents:

"Supplementary Guidance on Information Needed for Fire Protection Evaluation," dated October 21, 1976;

"Sample Technical Specification," dated May 12, 1977;

"Nuclear Plant Fire Protection Functional Responsibilities, Administrative Control and Quality Assurance," dated June 14, 1977;

"Manpower Requirements for Operating Reactors," dated May 11, 1978.

A Fire Protection Safety Evaluation Report that has been issued for each operating plant states how these guidelines were applied to each facility and identifies open fire protection issues that will be resolved when the facility satisfies the appropriate requirements of Appendix R to Part 50.

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tions of the fire main loop for maintenance or repair without interrupting the entire water supply.

C. *Hydrant isolation valves.* Valves shall be installed to permit isolation of outside hydrants from the fire main for maintenance or repair without interrupting the water supply to automatic or manual fire suppression systems in any area containing or presenting a fire hazard to safety-related or safe shutdown equipment.

D. *Manual fire suppression.* Standpipe and hose systems shall be installed so that at least one effective hose stream will be able to reach any location that contains or presents an exposure fire hazard to structures, systems, or components important to safety.

Access to permit effective functioning of the fire brigade shall be provided to all areas that contain or present an exposure fire hazard to structures, systems, or components important to safety.

Standpipe and hose stations shall be inside PWR containments and BWR containments that are not inerted. Standpipe and hose stations inside containment may be connected to a high quality water supply of sufficient quantity and pressure other than the fire main loop if plant-specific features prevent extending the fire main supply inside containment. For BWR drywells, standpipe and hose stations shall be placed outside the dry well with adequate lengths of hose to reach any location inside the dry well with an effective hose stream.

E. *Hydrostatic hose tests.* Fire hose shall be hydrostatically tested at a pressure of 150 psi or 50 psi above maximum fire main operating pressure, whichever is greater. Hose stored in outside hose houses shall be tested annually. Interior standpipe hose shall be tested every three years.

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F. *Automatic fire detection.* Automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components. These fire detection systems shall be capable of operating with or without offsite power.

G. *Fire protection of safe shutdown capability.* 1. Fire protection features shall be provided for structures, systems, and components important to safe shutdown. These features shall be capable of limiting fire damage so that:

a. One train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage; and

b. Systems necessary to achieve and maintain cold shutdown from either the control room or emergency control station(s) can be repaired within 72 hours.

2. Except as provided for in paragraph G.3 of this section, where cables or equipment, including associated non-safety circuits that could prevent operation or cause maloperation due to hot shorts, open circuits, or shorts to ground, of redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, one of the following means of ensuring that one of the redundant trains is free of fire damage shall be provided:

a. Separation of cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a 3-hour rating. Structural steel forming a part of or supporting such fire barriers shall be protected to provide fire resistance equivalent to that required of the barrier;

b. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or

c. Enclosure of cable and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area;

Inside noninerted containments one of the fire protection means specified above or one of the following fire protection means shall be provided:

d. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards;

e. Installation of fire detectors and an automatic fire suppression system in the fire area; or

f. Separation of cables and equipment and associated non-safety circuits of redundant trains by a noncombustible radiant energy shield.

3. Alternative or dedicated shutdown capability and its associated circuits,[2] independent of cables, systems or components in the area, room or zone under consideration, shall be provided:

a. Where the protection of systems whose function is required for hot shutdown does not satisfy the requirement of paragraph G.2 of this section; or

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b. Where redundant trains of systems required for hot shutdown located in the same fire area may be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems.

In addition, fire detection and a fixed fire suppression system shall be installed in the area, room, or zone under consideration.

H. *Fire brigade.* A site fire brigade trained and equipped for fire fighting shall be established to ensure adequate manual fire fighting capability for all areas of the plant containing structures, systems, or components important to safety. The fire brigade shall be at least five members on each shift. The brigade leader and at least two brigade members shall have sufficient training in or knowledge of plant safety-related systems to understand the effects of fire and fire suppressants on safe shutdown capability. The qualification of fire brigade members shall include an annual physical examination to determine their ability to perform strenuous fire fighting activities. The shift supervisor shall not be a member of the fire brigade. The brigade leader shall be competent to assess the potential safety consequences of a fire and advise control room personnel. Such competence by the brigade leader may be evidenced by possession of an operator's license or equivalent knowledge of plant safety-related systems.

The minimum equipment provided for the brigade shall consist of personal protective equipment such as turnout coats, boots, gloves, hard hats, emergency communications equipment, portable lights, portable ventilation equipment, and portable extinguishers. Self-contained breathing apparatus using full-face positive-pressure masks approved by NIOSH (National Institute for Occupational Safety and Health—approval formerly given by the U.S. Bureau of Mines) shall be provided for fire brigade, damage control, and control room personnel. At least 10 masks shall be available for fire brigade personnel. Control room personnel may be furnished breathing air by a manifold system piped from a storage reservoir if practical. Service or rated operating life shall be a minimum of one-half hour for the self-contained units.

At least a 1-hour supply of breathing air in extra bottles shall be located on the plant site for each unit of self-contained breathing appratus. In addition, an onsite 6-hour supply of reserve air shall be provided and arranged to permit quick and complete replenishment of exhausted air supply bottles as they are returned. If compressors are used as a source of breathing air, only units approved for breathing air shall be used and the compressors shall be operable assuming a loss of offsite power. Special care must be taken to locate the compressor in areas free of dust and contaminants.

I. *Fire brigade training.* The fire brigade training program shall ensure that the capability to fight potential fires is established and maintained. The program shall consist of an initial classroom instruction program followed by periodic classroom instruction, fire fighting practice, and fire drills:

1. *Instruction*

a. The initial classroom instruction shall include:

(1) Indoctrination of the plant fire fighting plan with specific identification of each individual's responsibilities.

(2) Identification of the type and location of fire hazards and associated types of fires that could occur in the plant.

(3) The toxic and corrosive characteristics of expected products of combustion.

(4) Identification of the location of fire fighting equipment for each fire area and familiarization with the layout of the plant, including access and egress routes to each area.

(5) The proper use of available fire fighting equipment and the correct method of fighting each type of fire. The types of fires covered should include fires in energized electrical equipment, fires in cables and cable trays, hydrogen fires, fires involving flammable and combustible liquids or hazardous process chemicals, fires resulting from construction or modifications (welding), and record file fires.

(6) The proper use of communication, lighting, ventilation, and emergency breathing equipment.

(7) The proper method for fighting fires inside buildings and confined spaces.

(8) The direction and coordination of the fire fighting activities (fire brigade leaders only).

(9) Detailed review of fire fighting strategies and procedures.

(10) Review of the latest plant modifications and corresponding changes in fire fighting plans.

NOTE: Items (9) and (10) may be deleted from the training of no more than two of the non-operations personnel who may be assigned to the fire brigade.

b. The instruction shall be provided by qualified individuals who are knowledgeable, experienced, and suitably trained in fighting the types of fires that could occur in the plant and in using the types of equipment available in the nuclear power plant.

c. Instruction shall be provided to all fire brigade members and fire brigade leaders.

[2] Alternative shutdown capability is provided by rerouting, relocating or modificating of existing systems; dedicated shutdown capability is provided by installing new structures and systems for the function of post-fire shutdown.

d. Regular planned meetings shall be held at least every 3 months for all brigade members to review changes in the fire protection program and other subjects as necessary.

e. Periodic refresher training sessions shall be held to repeat the classroom instruction program for all brigade members over a two-year period. These sessions may be concurrent with the regular planned meetings.

2. *Practice*

Practice sessions shall be held for each shift fire brigade on the proper method of fighting the various types of fires that could occur in a nuclear power plant. These sessions shall provide brigade members with experience in actual fire extinguishment and the use of emergency breathing apparatus under strenuous conditions encountered in fire fighting. These practice sessions shall be provided at least once per year for each fire brigade member.

3. *Drills*

a. Fire brigade drills shall be performed in the plant so that the fire brigade can practice as a team.

b. Drills shall be performed at regular intervals not to exceed 3 months for each shift fire brigade. Each fire brigade member should participate in each drill, but must participate in at least two drills per year.

A sufficient number of these drills, but not less than one for each shift fire brigade per year, shall be unannounced to determine the fire fighting readiness of the plant fire brigade, brigade leader, and fire protection systems and equipment. Persons planning and authorizing an unannounced drill shall ensure that the responding shift fire brigade members are not aware that a drill is being planned until it is begun. Unannounced drills shall not be scheduled closer than four weeks.

At least one drill per year shall be performed on a "back shift" for each shift fire brigade.

c. The drills shall be preplanned to establish the training objectives of the drill and shall be critiqued to determine how well the training objectives have been met. Unannounced drills shall be planned and critiqued by members of the management staff responsible for plant safety and fire protection. Performance deficiencies of a fire brigade or of individual fire brigade members shall be remedied by scheduling additional training for the brigade or members. Unsatisfactory drill performance shall be followed by a repeat drill within 30 days.

d. At 3-year intervals, a randomly selected unannounced drill shall be critiqued by qualified individuals independent of the licensee's staff. A copy of the written report from such individuals shall be available for NRC review.

e. Drills shall as a minimum include the following:

(1) Assessment of fire alarm effectiveness, time required to notify and assemble fire brigade, and selection, placement and use of equipment, and fire fighting strategies.

(2) Assessment of each brigade member's knowledge of his or her role in the fire fighting strategy for the area assumed to contain the fire. Assessment of the brigade member's conformance with established plant fire fighting procedures and use of fire fighting equipment, including self-contained emergency breathing apparatus, communication equipment, and ventilation equipment, to the extent practicable.

(3) The simulated use of fire fighting equipment required to cope with the situation and type of fire selected for the drill. The area and type of fire chosen for the drill should differ from those used in the previous drill so that brigade members are trained in fighting fires in various plant areas. The situation selected should simulate the size and arrangement of a fire that could reasonably occur in the area selected, allowing for fire development due to the time required to respond, to obtain equipment, and organize for the fire, assuming loss of automatic suppression capability.

(4) Assessment of brigade leader's direction of the fire fighting effort as to thoroughness, accuracy, and effectiveness.

4. *Records*

Individual records of training provided to each fire brigade member, including drill critiques, shall be maintained for at least 3 years to ensure that each member receives training in all parts of the training program. These records of training shall be available for NRC review. Retraining or broadened training for fire fighting within buildings shall be scheduled for all those brigade members whose performance records show deficiencies.

J. *Emergency lighting.* Emergency lighting units with at least an 8-hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto.

K. *Administrative controls.* Administrative controls shall be established to minimize fire hazards in areas containing structures, systems, and components important to safety. These controls shall establish procedures to:

1. Govern the handling and limitation of the use of ordinary combustible materials, combustible and flammable gases and liquids, high efficiency particulate air and charcoal filters, dry ion exchange resins, or other combustible supplies in safety-related areas.

2. Prohibit the storage of combustibles in safety-related areas or establish designated storage areas with appropriate fire protection.

3. Govern the handling of and limit transient fire loads such as combustible and flammable liquids, wood and plastic products, or other combustible materials in buildings containing safety-related systems or equipment during all phases of operating, and especially during maintenance, modification, or refueling operations.

4. Designate the onsite staff member responsible for the inplant fire protection review of proposed work activities to identify potential transient fire hazards and specify required additional fire protection in the work activity procedure.

5. Govern the use of ignition sources by use of a flame permit system to control welding, flame cutting, brazing, or soldering operations. A separate permit shall be issued for each area where work is to be done. If work continues over more than one shift, the permit shall be valid for not more than 24 hours when the plant is operating or for the duration of a particular job during plant shutdown.

6. Control the removal from the area of all waste, debris, scrap, oil spills, or other combustibles resulting from the work activity immediately following completion of the activity, or at the end of each work shift, whichever comes first.

7. Maintain the periodic housekeeping inspections to ensure continued compliance with these administrative controls.

8. Control the use of specific combustibles in safety-related areas. All wood used in safety-related areas during maintenance, modification, or refueling operations (such as lay-down blocks or scaffolding) shall be treated with a flame retardant. Equipment or supplies (such as new fuel) shipped in untreated combustible packing containers may be unpacked in safety-related areas if required for valid operating reasons. However, all combustible materials shall be removed from the area immediately following the unpacking. Such transient combustible material, unless stored in approved containers, shall not be left unattended during lunch breaks, shift changes, or other similar periods. Loose combustible packing material such as wood or paper excelsior, or polyethylene sheeting shall be placed in metal containers with tight-fitting self-closing metal covers.

9. Control actions to be taken by an individual discovering a fire, for example, notification of control room, attempt to extinguish fire, and actuation of local fire suppression systems.

10. Control actions to be taken by the control room operator to determine the need for brigade assistance upon report of a fire or receipt of alarm on control room annunciator panel, for example, announcing location of fire over PA system, sounding fire alarms, and notifying the shift supervisor and the fire brigade leader of the type, size, and location of the fire.

11. Control actions to be taken by the fire brigade after notification by the control room operator of a fire, for example, assembling in a designated location, receiving directions from the fire brigade leader, and discharging specific fire fighting responsibilities including selection and transportation of fire fighting equipment to fire location, selection of protective equipment, operating instructions for use of fire suppression systems, and use of preplanned strategies for fighting fires in specific areas.

12. Define the strategies for fighting fires in all safety-related areas and areas presenting a hazard to safety-related equipment. These strategies shall designate:

a. Fire hazards in each area covered by the specific prefire plans.

b. Fire extinguishants best suited for controlling the fires associated with the fire hazards in that area and the nearest location of these extinguishants.

c. Most favorable direction from which to attack a fire in each area in view of the ventilation direction, access hallways, stairs, and doors that are most likely to be free of fire, and the best station or elevation for fighting the fire. All access and egress routes that involve locked doors should be specifically identified in the procedure with the appropriate precautions and methods for access specified.

d. Plant systems that should be managed to reduce the damage potential during a local fire and the location of local and remote controls for such management (e.g., any hydraulic or electrical systems in the zone covered by the specific fire fighting procedure that could increase the hazards in the area because of overpressurization or electrical hazards).

e. Vital heat-sensitive system components that need to be kept cool while fighting a local fire. Particularly hazardous combustibles that need cooling should be designated.

f. Organization of fire fighting brigades and the assignment of special duties according to job title so that all fire fighting functions are covered by any complete shift personnel complement. These duties include command control of the brigade, transporting fire suppression and support equipment to the fire scenes, applying the extinguishant to the fire, communication with the control room, and coordination with outside fire departments.

g. Potential radiological and toxic hazards in fire zones.

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h. Ventilation system operation that ensures desired plant air distribution when the ventilation flow is modified for fire containment or smoke clearing operations.

i. Operations requiring control room and shift engineer coordination or authorization.

j. Instructions for plant operators and general plant personnel during fire.

L. *Alternative and dedicated shutdown capability.* 1. Alternative or dedicated shutdown capability provided for a specific fire area shall be able to (a) achieve and maintain subcritical reactivity conditions in the reactor; (b) maintain reactor coolant inventory; (c) achieve and maintain hot standby [3] conditions for a PWR (hot shutdown [3] for a BWR); (d) achieve cold shutdown conditions within 72 hours; and (e) maintain cold shutdown conditions thereafter. During the postfire shutdown, the reactor coolant system process variables shall be maintained within those predicted for a loss of normal a.c. power, and the fission product boundary integrity shall not be affected; i.e., there shall be no fuel clad damage, rupture of any primary coolant boundary, or rupture of the containment boundary.

2. The performance goals for the shutdown functions shall be:

a. The reactivity control function shall be capable of achieving and maintaining cold shutdown reactivity conditions.

b. The reactor coolant makeup function shall be capable of maintaining the reactor coolant level above the top of the core for BWRs and be within the level indication in the pressurizer for PWRs.

c. The reactor heat removal function shall be capable of achieving and maintaining decay heat removal.

d. The process monitoring function shall be capable of providing direct readings of the process variables necessary to perform and control the above functions.

e. The supporting functions shall be capable of providing the process cooling, lubrication, etc., necessary to permit the operation of the equipment used for safe shutdown functions.

3. The shutdown capability for specific fire areas may be unique for each such area, or it may be one unique combination of systems for all such areas. In either case, the alternative shutdown capability shall be independent of the specific fire area(s) and shall accommodate postfire conditions where offsite power is available and where offsite power is not available for 72 hours. Procedures shall be in effect to implement this capability.

4. If the capability to achieve and maintain cold shutdown will not be available because of fire damage, the equipment and systems comprising the means to achieve and maintain the hot standby or hot shutdown condition shall be capable of maintaining such conditions until cold shutdown can be achieved. If such equipment and systems will not be capable of being powered by both onsite and offsite electric power systems because of fire damage, an independent onsite power system shall be provided. The number of operating shift personnel, exclusive of fire brigade members, required to operate such equipment and systems shall be on site at all times.

5. Equipment and systems comprising the means to achieve and maintain cold shutdown conditions shall not be damaged by fire; or the fire damage to such equipment and systems shall be limited so that the systems can be made operable and cold shutdown can be achieved within 72 hours. Materials for such repairs shall be readily available on site and procedures shall be in effect to implement such repairs. If such equipment and systems used prior to 72 hours after the fire will not be capable of being powered by both onsite and offsite electric power systems because of fire damage, an independent onsite power system shall be provided. Equipment and systems used after 72 hours may be powered by offsite power only.

6. Shutdown systems installed to ensure postfire shutdown capability need not be designed to meet seismic Category I criteria, single failure criteria, or other design basis accident criteria, except where required for other reasons, e.g., because of interface with or impact on existing safety systems, or because of adverse valve actions due to fire damage.

7. The safe shutdown equipment and systems for each fire area shall be known to be isolated from associated non-safety circuits in the fire area so that hot shorts, open circuits, or shorts to ground in the associated circuits will not prevent operation of the safe shutdown equipment. The separation and barriers between trays and conduits containing associated circuits of one safe shutdown division and trays and conduits containing associated circuits or safe shutdown cables from the redundant division, or the isolation of these associated circuits from the safe shutdown equipment, shall be such that a postulated fire involving associated circuits will not prevent safe shutdown. [4]

M. *Fire barrier cable penetration seal qualification.* Penetration seal designs shall utilize only noncombustible materials and shall be qualified by tests that are comparable to tests used to rate fire barriers. The acceptance criteria for the test shall include:

1. The cable fire barrier penetration seal has withstood the fire endurance test without passage of flame or ignition of cables on the unexposed side for a period of time equivalent to the fire resistance rating required of the barrier;

2. The temperature levels recorded for the unexposed side are analyzed and demonstrate that the maximum temperature is sufficiently below the cable insulation ignition temperature; and

3. The fire barrier penetration seal remains intact and does not

allow projection of water beyond the unexposed surface during the hose stream test.

N. *Fire doors.* Fire doors shall be self-closing or provided with closing mechanisms and shall be inspected semiannually to verify that automatic hold-open, release, and closing mechanisms and latches are operable.

One of the following measures shall be provided to ensure they will protect the opening as required in case of fire:

1. Fire doors shall be kept closed and electrically supervised at a continuously manned location;

2. Fire doors shall be locked closed and inspected weekly to verify that the doors are in the closed position;

3. Fire doors shall be provided with automatic hold-open and release mechanisms and inspected daily to verify that doorways are free of obstructions; or

4. Fire doors shall be kept closed and inspected daily to verify that they are in the closed position.

The fire brigade leader shall have ready access to keys for any locked fire doors.

Areas protected by automatic total flooding gas suppression systems shall have electrically supervised self-closing fire doors or shall satisfy option 1 above.

O. *Oil collection system for reactor coolant pump.* The reactor coolant pump shall be equipped with an oil collection system if the containment is not inerted during normal operation. The oil collection system shall be so designed, engineered, and installed that failure will not lead to fire during normal or design basis accident conditions and that there is reasonable assurance that the system will withstand the Safe Shutdown Earthquake. [5]

Such collection systems shall be capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the reactor coolant pump lube oil systems. Leakage shall be collected and drained to a vented closed container that can hold the entire lube oil system inventory. A flame arrester is required in the vent if the flash point characteristics of the oil present the hazard of fire flashback. Leakage points to be protected shall include lift pump and piping, overflow lines, lube oil cooler, oil fill and drain lines and plugs, flanged connections on oil lines, and lube oil reservoirs where such features exist on the reactor coolant pumps. The drain line shall be large enough to accommodate the largest potential oil leak.

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[3] As defined in the Standard Technical Specifications.

[4] An acceptable method of complying with this alternative would be to meet Regulatory Guide 1.75 position 4 related to associated circuits and IEEE Std 384-1974 (Section 4.5) where trays from redundant safety divisions are so protected that postulated fires affect trays from only one safety division.

[5] See Regulatory Guide 1.29—"Seismic Design Classification" Paragraph C.2.

PART 50 DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

PROPOSED RULE MAKING

39 FR 26293
Published 7/18/74
Comment Period expires 9/16/74
(extended to 9/30/74)

General Design Criteria for Fuel Reprocessing Plants

The Atomic Energy Commission has under consideration amendments to its regulation 10 CFR Part 50, "Licensing of Production and Utilization Facilities," which would add an Appendix P, "General Design Criteria for Fuel Reprocessing Plants."

Paragraph (a) of § 50.34 requires that each application for a construction permit include, in the safety analysis report, the preliminary design for the facility. The following information is specified for inclusion:

(i) The principal design criteria for the facility;

(ii) The design bases and relation of the design bases to the principal design criteria;

(iii) Information relative to materials of construction, general arrangements, and approximate dimensions, sufficient to provide reasonable assurance that the final design will conform to the design bases with adequate margin for safety.

The "General Design Criteria for Fuel Reprocessing Plants" which follow would establish the minimum requirements for the principal design criteria for fuel reprocessing plants. Principal design criteria established by a license applicant and accepted by the Commission would be incorporated by reference into the construction permit. Before issuing an operating license under Part 50, the Commission would require assurance in the final safety analysis report that these criteria had been satisfied in the detailed design and construction of the facility and that any changes in such criteria are justified.

One of these criteria is that fuel reprocessing plants should be designed to facilitate decommissioning. The Commission requires that residual levels of radioactive contamination after decommissioning of a facility be sufficiently low as not to represent a hazard to the public health and safety. The Commission, after consultation with interested groups, intends to publish specific requirements for decommissioning which would be included in 10 CFR Part 50 after a rulemaking proceeding.

Concurrently with the publication for comment of this notice of proposed rulemaking, the Commission is making available to the public its "Environmental Impact Appraisal of Proposed Amendments to 10 CFR Part 50, General Design Criteria for Fuel Reprocessing Plants." Copies of the "Environmental Impact Appraisal of Proposed Amendments to 10 CFR Part 50, General Design Criteria for Fuel Reprocessing Plants" may be obtained by writing the U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Director of Regulatory Standards.

Pursuant to the Atomic Energy Act of 1954, as amended, and section 553 of title 5 of the United States Code, notice is hereby given that adoption of the following amendments to 10 CFR Part 50 is contemplated. All interested persons who desire to submit written comments or suggestions for consideration in connection with the proposed amendments should send them to the Secretary of the Commission, U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Chief, Public Proceedings Staff by September 16, 1974. Copies of comments received on the proposed amendments may be examined at the Commission's Public Document Room at 1717 H Street NW, Washington, D.C.

1. Paragraph (a)(3)(i) of § 50.34 is amended to read as follows:

§ 50.34 Contents of applications: Technical information.

(a) Preliminary safety analysis report. Each application for a construction permit shall include a preliminary safety analysis report. The minimum information [1] to be included shall consist of the following:

* * * * *

(3) The preliminary design of the facility including:

(i) The principal design criteria for the facility.

Appendix A, General Design Criteria for Nuclear Power Plants, establishes minimum requirements for the principal design criteria for water-cooled nuclear power plants similar in design and location to plants for which construction permits previously have been issued by the Commission and provides guidance to applicants for construction permits in establishing principal design criteria for other types of nuclear power units. Appendix P, General Design Criteria for Fuel Reprocessing Plants, establishes minimum requirements for the principal design criteria for fuel reprocessing plants;

* * * * *

2. Footnote 2 to § 50.34 is deleted.

3. A new Appendix P is added to read as follows:

APPENDIX P—GENERAL DESIGN CRITERIA FOR FUEL REPROCESSING PLANTS

I. INTRODUCTION

II. DEFINITIONS

Fuel reprocessing plant
Radiological protection
Confinement system
Single failure
Process safety features
Redundant equipment or system

III. CRITERIA

OVERALL REQUIREMENTS

	Number
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Protection against environmental conditions, natural phenomena, and missiles	2
Protection against fires and explosions	3
Sharing of structures, systems, and components	4
Proximity of sites	5
Testing and maintenance of systems and components	6
Emergency capability	7

PROTECTION BY MULTIPLE CONFINEMENT BARRIERS AND SYSTEMS

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PROCESS SAFETY FEATURES

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NUCLEAR CRITICALITY SAFETY

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RADIOLOGICAL PROTECTION

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FUEL AND RADIOACTIVE WASTE STORAGE

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I. INTRODUCTION

Pursuant to the provisions of § 50.34, an application for a construction permit for a fuel reprocessing plant must include the principal design criteria for the proposed facility. The principal design criteria establish the design, fabrication, construction, testing, and performance requirements for structures, systems, and components important to safety; that is, structures, systems, and components that provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public.

These General Design Criteria are intended

[1] [Deleted]

to aid the applicant for a construction permit for a fuel reprocessing plant in selection of the principal design criteria and to establish minimum requirements for the principal safety-related design criteria for fuel reprocessing plants. The development of these General Design Criteria is not yet complete. Any omissions do not relieve the applicant from the requirement of providing the necessary safety features in the design of a specific facility. In addition to satisfying the General Design Criteria, the applicant must:

1. Design against the loss of confinement capability or other capability which would jeopardize the health and safety of the public where such loss of capability results from any single failure in systems important to safety;

2. Provide redundancy and diversity in systems important to safety;

3. Minimize the possibility of non-random, concurrent failures of redundant elements in protection systems;

4. Provide design criteria for resistance of the facility to upper limit accidents and design bases for maximum probable natural phenomena;

5. Provide adequate protection for employees from hazards which could affect their performance of actions required to protect the public from exposure to radiation.

There may be some fuel reprocessing plants for which the General Design Criteria are not sufficient and for which additional criteria must be satisfied in the interest of public safety. In particular, it is expected that additional or different criteria will be needed to take into account variations in site and environmental conditions. Also, some of the General Design Criteria may not be necessary or appropriate for a specific plant. For plants such as these, departures from the General Design Criteria must be identified and justified.

II. DEFINITIONS

Fuel reprocessing plant. A fuel reprocessing plant means the structures, systems, and components required for the separation, recovery, storage, and handling of fissile and fertile nuclear material, byproducts, and waste from irradiated nuclear fuels or materials, and includes those structures and protection systems or components required to provide reasonable assurance that the plant can be operated without undue risk to the health and safety of the public.

Radiological protection. Radiological protection means protection against internal and external ionizing radiation.

Confinement system. A confinement system means the barrier and its associated systems, including ventilation, between areas containing radioactive substances and the environment or areas in the plant which are normally expected to have levels of radioactivity lower than that which the barrier is designed to confine.

Single failure. A single failure means an occurrence which results in the loss of capability of a component to perform its intended safety function(s). Multiple failures, i.e., loss of capability of several components, resulting from a single occurrence are considered to be a single failure. Systems are considered to be designed against an assumed single failure if neither (1) a single failure of any active component (assuming passive components function properly) nor (2) a single failure of any passive component (assuming active components function properly) results in a loss of the capability of the system to perform its safety functions.

Process safety features. A process safety feature means a feature designed to prevent, limit, or mitigate the release of radioactive material.

Redundant equipment or system. Any equipment or system that duplicates the essential function of any other equipment or system is considered to be redundant to the extent that either may perform the required function regardless of the state of operation or failure of the other.

III. CRITERIA OVERALL REQUIREMENTS

Criterion 1—Quality standards and records. Structures, systems, and components important to safety shall be designed, fabricated, erected, and tested in accordance with quality assurance criteria in Appendix B. Appropriate records of the design, fabrication, erection, and testing of structures, systems, and components important to safety shall be maintained by or under the control of the fuel reprocessing plant licensee throughout the life of the plant.

Criterion 2—Protection against environmental conditions, natural phenomena, and missiles. a. Structures, systems, and components important to safety shall be designed to withstand the effects of and to be compatible with the plant environmental conditions associated with operation, maintenance, plant shutdown, testing, and accidents.

b. Structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, lighting, hurricanes, floods, tsunami, and seiches without impairing their capability to perform safety functions. The principal design criteria for these structures, systems, and components shall include: (1) Resistance to the most severe of the natural phenomena reported for the site and surrounding area, with appropriate modifications to take into account the limited quantity of the historical data and the period of time in which the data have been accumulated; (2) safety features to cope with combinations of the effects of accident conditions and the effects of natural phenomena; and (3) features which provide for safe shutdown under emergency conditions, confinement of radioactivity during the emergency, and safe startup following unscheduled shutdown.

c. Capability for determining the intensity of natural phenomena which may occur for comparison with design bases of structures, systems, and components important to safety shall be provided.

d. Structures, systems, and components shall be appropriately protected against dynamic effects, including seismic motion and the effects of missiles and discharging fluids, that may result from equipment failure and from other similar events and conditions both inside and outside the fuel reprocessing plant.

Criterion 3—Protection against fires and explosions. Structures, systems, and components important to safety shall be designed and located so as to continue to perform their safety functions effectively under fire and explosion exposure conditions. Noncombustible and heat-resistant materials shall be used wherever practical throughout the facility, particularly in locations vital to the functioning of confinement barriers and systems, to methods of controlling radioactive materials within the facility, and to the maintenance of safety control functions. Explosion and fire detection, alarm, and suppression systems shall be designed and provided with sufficient capacity and capability to minimize the adverse effects of fires and explosions on structures, systems, and components important to safety. The design of the fire suppression system shall include provisions to protect against adverse effects in the event of system operation or failure.

Criterion 4—Sharing of structures, systems, and components. Structures, systems, and components important to safety shall not be shared between a fuel reprocessing plant and plants of any type unless it is shown that such sharing will not impair the capability of the fuel reprocessing plant to perform its safety functions, including the capability for orderly and safe shutdown in the event of an accident or incident.

Criterion 5—Proximity of sites. Fuel reprocessing plants located near other nuclear facilities and other activities licensed under this chapter shall be designed to assure that the cumulative effect of discharges resulting from their operation will not result in undue risk to the health and safety of the public.

Criterion 6—Testing and maintenance of systems and components. Systems and components that have safety-related functions shall be designed to permit inspection, maintenance, and testing to assure their continued functioning for the life of the facility.

Criterion 7—Emergency capability. Structures, systems, and components important to safety shall be designed to assure capability for safe shutdown of plant operations and handling of an emergency. The design shall assure capability for use, as necessary, of onsite facilities and available offsite facilities and services such as hospitals, fire and police departments, ambulance service, and utility personnel.

PROTECTION BY MULTIPLE CONFINEMENT BARRIERS AND SYSTEMS

Criterion 8—Confinement barriers and systems. The total confinement system shall consist of one or more individual confinement barriers and systems which successively control against the release of radioactivity to the environment. The confinement system shall be designed to protect against the effects of accidents or external natural phenomena and shall be fabricated, erected, tested, and maintained to assure prevention of abnormal leakage, rapidly propagating failure, or gross rupture during the design life.

Criterion 9—Ventilation and offgas systems. The ventilation and offgas systems shall be designed and tested to assure the confinement of radioactive materials during normal or abnormal conditions. To accomplish this objective, these systems shall be designed to meet the following requirements:

a. The proper ventilating air flow direction shall be maintained across the confinement barrier, that is, between areas inside the barrier and areas outside the barrier, under operating and accident conditions.

b. The ventilation system shall accommodate changes in operating conditions such as variations in temperature or pressure and shall be capable of safely controlling all radioactive offgases that could be associated with normal or accident conditions.

c. The continuity of necessary ventilation shall be assured by means of redundant equipment, fail-safe control systems, or other provisions.

d. Provisions shall be made for testing all safety-related components during normal operation of the systems to demonstrate their ability to perform at design efficiency and to function during emergency conditions and during transitions between normal and emergency conditions.

e. Ventilation systems shall be designed to permit the continued occupancy of any and all areas where such occupancy is required for normal plant operations, for safe shutdown or maintaining the plant in a safe shutdown condition. The design shall include protection against the intake or accumulation of radioactive materials. The design shall also permit the timely and safe evacuation of personnel from all areas.

f. Vessel and dissolver offgas systems shall be designed to confine the radioactive materials during normal operation and to assure that the concentration of radioactive materials in the effluent gasses is as low as practicable. Such systems shall also be designed to retain their confinement and separation capability to reduce releases resulting from an accident condition to levels consistent with the regulations contained in

this chapter.

PROCESS SAFETY FEATURES

Criterion 10—Protection systems. a. Protection systems shall be designed (1) to initiate action that will assure that specified acceptable operating design limits are not exceeded as a result of operational occurrences and (2) to sense potential hazardous or accident conditions and to activate systems and components required to assure the safety of operating personnel and the public or to give audible and visual alarm so that action can be taken in a timely manner to assure such safety. Protection systems and components shall be activated automatically where this mode is compatible with the safety requirements to be satisfied.

b. Protection systems shall have reliability and *in situ* testability. The design of protection systems shall provide for redundancy and independence at least sufficient to assure that (1) no single failure results in loss of the protection functions and (2) removal from service of any component does not result in loss of the required redundancy unless it can be otherwise demonstrated that the protection system will operate with acceptable reliability. The protection systems shall be designed to permit the periodic testing of its functions and efficiencies while the plant is in operation, to determine whether failures or losses of redundancy may have occurred.

c. Protection systems shall be designed to fail into a safe state or into a state demonstrated to be acceptable on some other defined basis if conditions such as disconnection of the system, loss of energy or motive power, or adverse environments are experienced.

Criterion 11—Instrumentation and control systems. Instrumentation and control systems shall be provided to monitor safety-related variables and operating systems over anticipated ranges for normal operation, for abnormal operation, for accident conditions, and for safe shutdown. These systems shall be provided with engineered safety features in the redundancy required to assure adequate safety of process and utility operations. The variables and systems that require constant surveillance and control include parts of the process, the overall confinement system, each confinement barrier and its associated systems, and other systems that affect the overall safety of the plant. Controls shall be provided to maintain these variables and systems within the prescribed operating ranges under all normal conditions. Instrumentation and control systems shall be designed to be fail safe or to assume a state demonstrated to be acceptable on some other basis if conditions such as disconnection, loss of energy or motive power, or adverse environments are experienced.

Criterion 12—Separation of process safety features and control systems. The process safety features shall be separated from control systems to the extent that a change or failure in either leaves intact a system which satisfies all reliability and independence requirements of the process safety systems.

Criterion 13—Control room. A control room or control areas shall be designed to permit occupancy and actions to be taken to operate the plant safely under normal conditions and to maintain the plant in a safe condition under accident or other abnormal conditions. Instrumentation and controls in the control room or control areas shall be designed with sufficient redundancy to allow the plant to be put into a safe condition if any one control room or control area is removed from service.

Criterion 14—Process systems. Process components and systems are the first confinement barrier. The design of each process system shall provide capability for the system to maintain its integrity and operability to protect the public health and safety under all normal process conditions and abnormal conditions, including the maximum expected inventories of fissile materials and other radionuclides. Provisions shall be included for the safe handling of anticipated nonroutine process requirements.

Criterion 15—Utility services. a. The design of each utility service system required for emergency conditions shall provide for the meeting of safety demands under normal and abnormal conditions. The design of safety-related utility services and distribution shall include redundant systems to the extent necessary to maintain, with adequate capacity, the ability to perform safety functions assuming a single failure.

b. Emergency utility services shall be designed to permit testing of their functional operability and capacity, including the full operational sequence, of each system for transfer between normal and emergency supply sources, and the operation of associated safety systems.

c. Provisions shall be made so that, in the event of a loss of the primary electric power source or circuit, reliable and timely emergency power will be provided to instruments, confinement systems, utility service systems, and process systems in amounts sufficient to allow operations to be shut down safely and to be maintained in a safe shutdown condition with all safety devices essential to safe shutdown functioning. The onsite emergency power sources and the electrical distribution circuits shall have independence, redundancy, and testability to assure performance of their safety functions in the event of a single failure or an accident.

NUCLEAR CRITICALITY SAFETY

Criterion 16—Safety margins. The design of process and storage systems shall include margins of safety for the nuclear criticality parameters that are commensurate with the uncertainties in the process and storage conditions, in the data and methods used in calculations, and in the nature of the immediate environment under accident conditions. All process and storage systems shall be designed to be maintained subcritical and to assure that no nuclear criticality accident can occur unless at least two unlikely, independent, and concurrent or sequential changes have occurred in the conditions essential to nuclear criticality safety.

Criterion 17—Methods of control. a. Favorable geometry, in which equipment or systems are subcritical by virtue of neutron leakage under worst credible conditions, is the preferred method of nuclear criticality control.

b. Where the favorable geometry method of nuclear criticality control is not practical, the use of permanently fixed neutron-absorbing materials (poisons) is the next preferred method of control.

c. Where both the favorable geometry and the permanently fixed neutron-absorbing materials (poisons) methods of nuclear criticality control are not practical, administrative controls of moderation, fissile material concentration, total fissile material, or the use of soluble neutron-absorbing materials (poisons) shall be employed when combined with margins of safety measurements or appropriate analysis and engineered safety features.

Criterion 18—Neutron absorbers. Where solid neutron-absorbing materials (poisons) are used for the prevention of nuclear criticality, the design shall provide for positive means to verify their continued efficacy. Soluble neutron-absorbing materials may be used as a primary nuclear criticality control provided: (1) two independent methods are provided to assure the presence of the required concentration of neutron absorber and (2) the equipment containing the fissile material is located behind sufficient barriers and shielding to reduce the probability and extent of accidental contamination of the environment and accidental radiation exposure to personnel in the event of a criticality accident.

Criterion 19—Ancillary Criteria for Nuclear Criticality Safety. a. Process and storage systems shall be designed to assure that no mechanisms that could cause segregation of fissile materials can be present in components whose nuclear criticality safety is dependent on the homogeneous distribution of fissile material.

b. Components whose nuclear criticality safety is dependent on a limiting concentration of fissile material shall be designed so that either (1) mechanisms that could cause critical concentrations of fissile materials are not present or (2) concentration is controlled by positive instrumental means.

c. Process and storage systems shall be designed to assure that the transfer of fissile material from safe systems to unsafe systems is not possible as a consequence of any single failure or operating error.

d. Confinement system components shall be designed to assure that leakage from equipment or from one confinement zone to another confinement zone cannot result in a condition that would result in nuclear criticality.

e. The spacing between discrete accumulations of fissile materials shall be controlled so as to maintain a subcritical state.

RADIOLOGICAL PROTECTION

Criterion 20—Access control. The design of the facility shall provide for control of access to the facility and to areas of potential contamination or high radiation within the facility. The facility shall be designed so that the spread of contamination can be monitored and controlled.

Criterion 21—Radiation shielding. Shielding shall be designed to assure that dose rates in accessible areas are consistent with the regulations contained in this chapter.

Criterion 22—Radiation alarm systems. Radiation alarm systems shall be provided to warn plant personnel of significant increases in radiation levels in normally accessible spaces and of excessive radioactivity released in plant effluents. Such systems shall be designed with redundancy and with capability to permit testing their efficiency of operation.

Criterion 23—Effluent monitoring. All plant effluent systems shall be designed to include means for measuring and recording the amount of radionuclides in any effluent. In order that the data thus measured and recorded can be used, the flow of environmental diluting media, either air or water, shall be determined.

Criterion 24—Effluent control. The design of the plant shall include means to control the release of radioactive effluents, whether gas, liquid, or solid, during normal operations and under accident conditions. Systems provided to guard against the release of radioactive materials shall be designed to be monitored and tested, and shall be provided with alarms. Capability shall be provided for prompt cessation of the flow of contaminated liquid effluents or for retention of such effluents as is necessary to assure that the concentrations of radioactive materials in liquid effluents are maintained as low as practicable.

FUEL AND RADIOACTIVE WASTE STORAGE

Criterion 25—Fuel and radioactive waste systems. Fuel storage, radioactive waste storage, and other systems that might contain or handle radioactive materials shall be designed to assure adequate safety under normal and accident conditions. These systems shall be designed (1) with a capability to test components important to safety, (2) with suitable shielding for radiation protection under normal and accident conditions, (3) with confinement systems, and (4) with a heat removal capability having testability and reliability that reflects the importance to safety.

Criterion 26—Waste disposal systems. The waste disposal systems shall be designed so

that their performance will comply with the regulations in this chapter.

DECOMMISSIONING

Criterion 27—Decommissioning. In accordance with Appendix F, a design objective for fuel reprocessing plants shall be to facilitate decontamination and removal of all significant radioactive wastes at the time the facility is permanent decommissioned.

42 FR 17134
Published 3'31/77
Comment Period expires 5/2/77
Partial effective rule published 7/18/77

[10 CFR Part 50]

LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Codes and Standards for Nuclear Power Plants

The Nuclear Regulatory Commission has under consideration amendments to its regulation, 10 CFR Part 50, "Licensing of Production and Utilization Facilities," which would incorporate by reference new addenda to specified published national codes and would clarify provisions in § 50.55a and Appendix G to Part 50.

On December 6, 1976, the Nuclear Regulatory Commission published in the FEDERAL REGISTER (41 FR 53333) an amendment to § 50.55a which provides that the editions of the referenced Codes and Addenda whose requirements must be met include those Addenda through the Summer 1975 Addenda.

Additional Addenda of the referenced ASME Boiler and Pressure Vessel Code have been issued through the Winter 1976 Addenda. The Commission proposes to amend § 50.55a to incorporate by reference the Addenda through the Winter 1976 Addenda to Section III, Division 1, "Rules for the Construction of Nuclear Power Plant Components," of the ASME Boiler and Pressure Vessel Code. The Winter 1975, Summer 1976, and Winter 1976 Addenda to Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Code are still being evaluated and are expected to be referenced with modifications in a subsequent amendment to the regulations. Until these addenda are incorporated by reference in the regulations, the Summer 1975 Addenda will continue to be the latest Addenda in effect in the regulations for Section XI of the ASME Code. Comments on Section XI of the Code will be considered after the Commission issues the proposed rule inviting comments on the subject.

Changes of a clarifying nature also are included in the proposed amendments to § 50.55a. The changes to footnote 4 and additions to paragraphs (g)(3) and (g)(4) are intended to make clear that references to codes in § 50.55a apply only to those editions of the codes and Addenda which have been reviewed by the Commission and have been incorporated by reference in paragraph (b) of that section.

A proposed amendment to Appendix G to Part 50 is included to clarify the requirements for the minimum metal temperature that must be maintained during reactor startup to assure an adequate margin against fracture of the closure flanges and adjacent head and shell regions that are stressed by the closure bolting. This amendment would not change present requirements as given in the 1974 Edition of Section III of the ASME Boiler and Pressure Vessel Code and incorporated by reference in Appendix G to 10 CFR Part 50. This amendment is necessary to retain the margin of safety against brittle fracture presently required because the Summer 1976 Addenda which would be incorporated by reference include a change in paragraph G 2222(c) of Appendix G to Section III of the ASME Boiler and Pressure Vessel Code which would permit a decrease in the required margin of safety.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of Title 5 of the United States Code, notice is hereby given that adoption of the following amendments of 10 CFR Part 50 is contemplated. All interested persons who wish to submit written comments or suggestions in connection with the proposed amendments should send them to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch by May 2, 1977. Copies of comments received may be examined in the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C.

1. Section 50.55a is amended by deleting the phrases "in effect" and "in effect '" wherever they appear except in paragraph (h) and substituting therefor the phrase "in effect '"; by deleting the phrases "become effective" and "became effective" wherever they appear except in paragraph (g)(4)(v) and in paragraph (h) and substituting therefor the phrases "become effective '" and "became effective '", respectively; by deleting the language "set forth in Section XI of editions of the ASME Boiler and Pressure Vessel Code and Addenda [1,4] applied to" in paragraphs (g)(3)(i) through (g)(3)(iv) and substituting therefor the language "set forth in editions of Section XI of the ASME Boiler and Pressure Vessel Code and Addenda [1,4] in effect [4] on the date when the editions of Section III of this Code and Addenda apply to"; by deleting the phrase "and are incorporated by reference in paragraph (b) of this section," in the prefatory language of paragraph (g)(4); by deleting the phrase "no more than" in paragraph (g)(4)(i) through (g)(4)(iv) and adding the phrase "or may comply with later editions and addenda that become effective" at the end of these paragraphs; by revising paragraphs (b), and footnote 4 to read as follows:

§ 50.55a Codes and standards.

Each operating license for a boiling or pressurized water-cooled nuclear power facility shall be subject to the conditions in paragraph (g) of this section and each construction permit for a utilization facility shall be subject to the following conditions in addition to those specified in § 50.55:

• • • • • •

(b) As used in this section, references [1] to editions of Criteria, Codes and Standards include only those editions through 1974; references [1] to Addenda include only those Addenda through the Summer 1975 Addenda, except references [1] to Addenda of Section III, Division 1, of the ASME Boiler and Pressure Vessel Code include those Addenda through the Winter 1976 Addenda.

• • • • • •

[4] For purposes of paragraphs (a) through (g) and paragraphs (i) and (j) of this section, ASME code editions and addenda are considered to be "in effect" or "effective" after they are incorporated by reference in paragraph (b) of this section.

2. In 10 CFR Part 50, Appendix G is amended by adding a new paragraph IV.A.2.e. to read as follows:

IV. FRACTURE TOUGHNESS REQUIREMENTS

A. • • •
1. • • •
2. For vessels, exclusive of bolting or other fasteners:

• • • • • •

e. When the flanges and adjacent head and shell regions of vessels are stressed by the full intended bolt preload and by pressure not exceeding 20% of the preoperational system hydrostatic test pressure, minimal metal temperature in the stressed region should be at least 60° F. above the RT_{NDT} temperature for the material in the stressed region, considering its initial RT_{NDT} temperature, plus the effect of irradiation at the stressed region, if any.

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(extended to 7/15/78)

[10 CFR Parts 30, 40, 50, and 70]

DECOMMISSIONING CRITERIA FOR NUCLEAR FACILITIES

Advance Notice of Proposed Rulemaking

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Advance Notice of Proposed Rulemaking.

SUMMARY: The U.S. Nuclear Regulatory Commission has underway extensive studies intended to provide a data base for developing decommissioning criteria for nuclear facilities. The Commission is considering amending its regulations to provide more specific guidance on decommissioning criteria for production and utilization facility licensees and byproduct, source, and special nuclear material licensees. This notice is to invite advice and recommendations on several questions concerning decommissioning nuclear facilities.

DATES: Comment period expires May 15, 1978.

ADDRESSES: Interested persons are invited to submit written comments and suggestions to the Secretary of

[1] These incorporation by reference provisions were approved by the Director of the FEDERAL REGISTER on March 17, 1972 and May 4, 1973.

the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Copies of comments received by the Commission may be examined in the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT:

Mr. Robert M. Bernero, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (phone 301-443-3573).

SUPPLEMENTARY INFORMATION: Present requirements and practices relating to the decommissioning of nuclear facilities are addressed in guides and regulations of the U.S. Nuclear Regulatory Commission. Section 50.33(f) of Title 10, Code of Federal Regulations requires the Nuclear Regulatory Commission (NRC) to determine, prior to the issuance of a license, that an applicant for an operating license is financially qualified to permanently shut down his facility and maintain it in a safe condition. Section 50.82 of Part 50 specifies requirements concerning termination of facility licenses. NRC Regulatory Guide 1.86 describes methods and procedures acceptable to the NRC staff for the termination of operating licenses for reactors. The guide specifies limits which must be met before buildings, structures, and equipment, etc., can be released on an unrestricted basis. The guide also discusses alternatives for reactor retirement, i.e., (1) mothballing, (2) in-place entombment, (3) removal of radioactive components and dismantling, and (4) conversion to a new nuclear system or a fossil fuel system.

Appendix F of Part 50 was amended in 1971 to require an applicant for certain licenses to provide information to enable the Commission to determine whether the applicant is financially qualified to provide for the removal and disposal of radioactive waste. Appendix F also states that a design objective of a fuel reprocessing plant shall be to facilitate decontamination and that the Commission will develop criteria for the extent of decontamination to be required upon decommissioning in consultation with competent groups.

Regulatory Guides dealing with the content and format of applications and environmental reports for uranium mill licenses presently request information on tailings stabilization and associated financial arrangements for assuring that tailings are stabilized. Also, a generic environmental impact statement (EIS) on uranium milling is under preparation. One primary objective of the EIS is to provide an information base for a rulemaking action covering the decommissioning and long-term disposition of mill tailings.

Several enriched uranium fuel fabrication facilities have, in the past, ceased operations. These plants generally have been decontaminated to below limits essentially the same as those specified in Regulatory Guide 1.86. The same holds true for other locations where byproduct, source, and special nuclear material have been used.

In 1975, the NRC initiated studies at Battelle-PNL to provide an information base for developing decommissioning criteria and guidelines for light water reactors and their fuel cycle facilities. These studies will also include waste burial grounds. The studies will evaluate the technology, costs, and the environmental impact (both occupational and public) related to decommissioning. These studies have led to a final report on decommissioning a fuel reprocessing plant in October 1977. A final report on decommissioning a pressurized water reactor is scheduled for May 1978. Other reports are scheduled over the next two years to complete these studies.

In a petition dated July 5, 1977, as supplemented October 7, 1977, the Public Interest Research Group, and others, requested the Commission to initiate rulemaking to promulgate regulations for nuclear power plant decommissioning. The regulations requested by the petitioners would require plant operators to post bonds to be held in escrow, prior to each plant's operations, to ensure that funds will be available for proper and adequate isolation of radioactive material upon each plant's decommissioning. The petitioners state that the regulations should also require that nuclear power plants already in operation establish plans and immediately post bonds, to be held in escrow, to ensure proper decommissioning. The petitioners argue that this arrangement will ensure that the cost of decommissioning is paid for by current beneficiaries and not by future generations.

The Commission is considering development of a more explicit overall policy for decommissioning nuclear facilities and amending its regulations in 10 CFR Parts 30, 40, 50 and 70 to include more specific guidance on decommissioning criteria for production and utilization facility licensees and byproduct, source, and special nuclear material licensees. It is anticipated that the issue raised in the PIRG petition discussed above will be processed separately from the overall policy development. Advice and recommendations on the matter of overall policy development are invited from all interested persons. Specifically, comments are requested on the following questions.

1. Is it desirable to develop more definitive decommissioning criteria for production and utilization facility licensees and byproduct, source, and special nuclear material licensees? If so, should the criteria be in the form of:

A. Potential exposures to individuals;

B. Numerical contamination limits;

C. Other? (Specify)

2. Should detailed decommissioning plans be required prior to the issuance of licenses?

3. Should funding or other surety arrangements be required before the issuance of licenses for all cases? If not, which cases?

4. What are acceptable criteria for residual levels of radioactivity on materials which can be released for unrestricted use?

5. Proposals have been made to maintain reactors, which have been closed, in protective storage for lengthy periods of time to allow for radioactive decay prior to dismantlement. From the standpoint of determining the impact to future generations, what is an acceptable length of time, if any, after a facility operation ceases before the facility should be decommissioned?

6. Should decommissioning criteria extend to buildings, structures, and components which have not been contaminated with radioactive materials?

The Commission has concluded that action to include specific decommissioning criteria and guidelines in its regulations for production and utilization facility licensees and byproduct, source, and special nuclear material licensees would constitute a major Federal action significantly affecting the quality of the human environment and as such will require the preparation of an environmental impact statement pursuant to Section 102(2)(C) of the National Environmental Policy Act (NEPA). Accordingly, an impact statement(s) will be prepared should the Commission determine it is in the public interest to proceed to amend its regulations as described above.

43 FR 19053
Published 5/3/78
Comment period extended to 7/15/78

[10 CFR Parts 30, 40, 50 and 70]

DECOMMISSIONING CRITERIA FOR NUCLEAR FACILITIES

Extension of Comment Period

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Extension of comment period on advance notice of proposed rulemaking.

SUMMARY: On March 13, 1978, the U.S. Nuclear Regulatory Commission published an advance notice of proposed rulemaking relating the the development of decommissioning criteria for nuclear facilities. The Commission has been requested to extend the comment period of the advance notice in order to provide more time to submit public comments. This notice extends the comment period of the March 13, 1978 notice.

DATES: Comment period expires July 15, 1978.

ADDRESSES: Interested persons are invited to submit written comments and suggestions to the Secretary of

the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Copies of comments received by the Commission may be examined in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT:

Mr. Robert M. Bernero, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington D.C. 20555, phone 301-443-3573.

SUPPLEMENTARY INFORMATION: On March 13, 1978, the Nuclear Regulatory Commission published in the FEDERAL REGISTER (43 FR 10370) an advance notice of proposed rulemaking to invite advice and recommendations on several questions concerning decommissioning nuclear facilities.

In the notice, the Commission explained present requirements and practices relating to the decommissioning of nuclear facilities. The Commission further described ongoing studies at the Battelle Pacific Northwest laboratory to provide bases for the reevaluation and development of decommissioning criteria and guidelines for light water reactors and their supporting fuel cycle facilities. Comments were requested on several specific issues and questions in order to invite advice and recommendations on the matter of overall decommissioning policy development. Interested persons were invited to submit comments on the notice by May 15, 1978.

In view of a request for additional comment time from Debevoise & Liberman on behalf of Arkansas Power & Light Co., Dallas Power & Light Co., Jersey Central Power & Light Co., Metropolitan Edison Co., Pacific Gas & Electric Co., Pennsylvania Electric Co., Southern California Edison Co., Texas Electric Service Co., Texas Power & Light Co., Texas Utilities Generating Co., Virginia Electric & Power Co., and Yankee Atomic Electric Co., the Commission is hereby extending the time for submitting written comments or suggestions concerning the notice to July 15, 1978. Any written submissions should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch.

44 FR 61372
Published 10/25/79
Comment period expires 11/26/79

10 CFR Parts 50 and 51

Storage and Disposal of Nuclear Waste

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Notice of Proposed Rulemaking.

SUMMARY: The United States Nuclear Regulatory Commission is conducting a generic proceeding to reassess its degree of confidence that radioactive wastes produced by nuclear facilities will be safely disposed of, to determine when any such disposal will be available, and whether such wastes can be safely stored until they are safely disposed of. This rulemaking has been initiated in response to the decision of the United States Court of Appeals for the District of Columbia Circuit in *State of Minnesota* v. *NRC*, Nos. 78-1289 and 78-2032 (May 23, 1979), but it also is a continuation of previous proceedings conducted by the Commission in this area. 42 FR 34391 (July 5, 1977).

This notice describes the procedures the Commission will employ to conduct that proceeding and how members of the public can participate. If the Commission finds from this proceeding reasonable assurance that radioactive wastes from nuclear facilities will be safely stored or disposed of off-site prior to the expiration of the license for the facility, it will promulgate a rule providing that the safety and environmental implications of radioactive waste remaining on site after the anticipated expiration of the facility licenses involved need not be considered in individual facility licensing proceedings. In the event the Commission determines that on-site storage after license expiration may be necessary or appropriate, it will issue a proposed rule providing how that question will be addressed.

DATES: Notices of intent to participate must be filed by November 26, 1979. Other deadlines are described below.

ADDRESS: Send comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. All filings will be available for public inspection in the Commission's Public Document Room at 1717 H. Street, N.W., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Stephen S. Ostrach, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. (202) 634-3224.

SUPPLEMENTARY INFORMATION:

Background

On May 23, 1979 the United States Court of Appeals for the District of Columbia Circuit remanded two licensing actions to the Commission to consider whether an off-site storage solution for nuclear wastes will be available by the years 2007-09, the expiration dates of the licenses of the Vermont Yankee and Prairie Island nuclear plants to which the Commission had granted permits to increase the on-site waste storage facilities, and, if not, whether that waste can be stored at the sites past those dates and until an off-site solution is available. In response to the D.C. Circuit's decision the Commission has decided to undertake a generic reconsideration of the radioactive waste question so that it can: (1) reassess its confidence that safe off-site disposal of radioactive waste from licensed facilities will be available; (2) determine when any such disposal or off-site storage will be available; and (3) if disposal or off-site storage will not be available until after the expiration of the licenses of certain nuclear facilities, determine whether the wastes generated by those facilities can be safely stored on-site until such disposal is available. Previously, in connection with a petition for rulemaking filed by the Natural Resources Defense Council the Commission considered the related question of the likelihood that waste disposal will be accomplished safely, and at that time it found reasonable assurance that methods of safe permanent disposal of high-level waste would be available when they were needed. 42 FR 34391, 34393 (July 5, 1977), *pet. for rev. dismissed sub nom. NRDC* v. *NRC*, 582 F.2d 166 (2nd Cir. 1978). However, in denying the NRDC petition, the Commission announced its intent to reassess this finding periodically. This new proceeding will offer an opportunity for the Commission to reassess its earlier finding, to obtain wider public participation in its decision and also to take account of new data and recent developments in the federal waste management plan, most notably the Report to the President by the Interagency Review Group on Waste Management, TID-29442 (March, 1979) (the "IRG Report").

Purpose of Proceeding

The purpose of this proceeding is solely to assess generically the degree of assurance now available that radioactive waste can be safely disposed of, to determine when such disposal or off-site storage will be available, and to determine whether radioactive wastes can be safely stored on-site past the expiration of existing

facility licenses until off-site disposal or storage is available. In addition to information submitted by public participants and government agencies, this proceeding will draw upon the record compiled in the Commission's recently concluded rulemaking on the environmental impacts of the nuclear fuel cycle (44 FR 45362–74 (August 2, 1979)), and the record compiled herein will be available for use in the general fuel cycle rule update discussed in that rulemaking. However, this proceeding is not designed to reach quantitative conclusions about waste repository impacts or performance. The Commission will consider economic issues in this proceeding in the same fashion such issues were considered in the recent fuel cycle rulemaking: namely, a waste disposal model will not be considered realistically available if it would be prohibitively expensive to build and operate such a proposed facility. *Cf.* 44 FR at 45367.

During this proceeding the safety implications and environmental impacts of radioactive waste storage on-site for the duration of a license will continue to be subjects for adjudication in individual facility licensing proceedings. The Commission has decided, however, that during this proceeding the issues being considered in the rulemaking should not be addressed in individual licensing proceedings. These issues are most appropriately addressed in a generic proceeding of the character here envisaged. Furthermore, the court in the *State of Minnesota* case by remanding this matter to the Commission but not vacating or revoking the facility licenses involved, has supported the Commission's conclusion that licensing practices need not be altered during this proceeding. However, all licensing proceedings now underway will be subject to whatever final determinations are reached in this proceeding.

If the Commission finds reasonable assurance that safe, off-site disposal for radioactive wastes from licensed facilitites will be available prior to expiration of the facilities' licenses, it will promulgate a final rule providing that the environmental and safety implications of continued on-site storage after the termination of licenses need not be considered in individual licensing proceedings. In the event the Commission determines that on-site storage after license expiration may be necessary or appropriate, it will issue a proposed rule providing how that question will be addressed.

Procedures

The Commission has chosen to employ hybrid rulemaking procedures for conducting this proceeding. Within thirty days after publication of this notice members of the public may file a notice of intent to participate as a "full participant" in the further stages of the proceeding discussed below. The notice of intent should set forth the person's or group's identity, technical or other qualifications to participate, tentative positions on the issues to be considered, and a discussion of any special matters or concerns sought to be raised. Furthermore, at that time those members of the public who do not wish to be full participants but who wish to file comments on the issues addressed in this rulemaking should file their comments.

The individuals or groups who have chosen to participate as full participants shall be supervised by a "presiding officer" to be named by the Commission at a later date. That officer's principal responsibility will be to monitor the early stages of the proceeding for the Commission, and to assist the Commission in conducting the later portions. To those ends he or she will have authority to order consolidation of individuals or groups in the same fashion provided in 10 CFR 2.715a. The presiding officer may take appropriate action to avoid delay, including, if necessary, holding pre-hearing conferences or certifying matters to the Commission.

The Commission's staff will compile a full bibliography on the subjects relevant to the proceeding which will be made available to the public at an early stage of this proceeding. In addition to that bibliography the Commission will maintain a publicly available data bank which will include relevant information on waste storage and disposal. The data bank will include the IRG Report, the background material the IRG collected in preparing the report, the Generic Environmental Impact Statement on Waste Management being prepared by the Department of Energy, and a collection of other principal works that the Commission staff will compile on the subject of radioactive waste storage and disposal. Furthermore, the Commission will solicit the views of a number of federal agencies on the questions involved in this proceeding and on the conclusions of the IRG Report and make the responses of those agencies available in the data bank so that the participants can address them in their papers. The Commission expects that full participants will voluntarily make relevant documents in their possession available to other full participants to the extent practical and will reference and produce on request the documents on which they rely.

The Commission is considering whether additional procedures should be employed. One proposal is to strictly control inter-participant discovery and to provide that requests for interrogatories, depositions or other formal discovery will not be entertained unless the Commission finds compelling justification therefor. If this proposal were adopted, the Commission expects that there would be at most only a few exceptional circumstances in which such justification could be demonstrated. An alternative proposal which is also under consideration would be to apply to this proceeding the discovery procedures set forth in 10 CFR Part 2 and to have any discovery supervised by the presiding officer. Participants or other members of the public who wish to express views on this matter should file those views with their notices of intent or comments which are due November 28, 1979. In particular participants should discuss whether imposition of the discovery provisions of Part 2 or their absence would be likely to alter their willingness to participate in this rulemaking or to affect the quality of their contribution to the record. The presiding officer will then summarize the views expressed and present his or her recommendations to the Commission. The Commission will issue a prompt decision on this matter so that the participants' preparation of their statements will not be adversely affected by uncertainty as to the extent of data that may be available to them.

Approximately 30 days after the notices of intent are filed, the officer will issue a prehearing order resolving all preliminary issues including consolidation. Following the prehearing order the participants will have approximately 60 additional days (the exact time to be set in the prehearing order) to prepare and file their statements of position. The statements will be the participants' principal contribution to the waste confidence proceeding, and participants should focus their preparation on them. The statements should set forth the participants' views on the issues discussed above, and on the underlying assumptions and scenarios, both technical and institutional, upon which those views are based. After the statements are filed, the participants will be given approximately 60 days (to be set by the order) to prepare cross-statements discussing statements filed by other participants. The cross-statements should be limited to material discussed in the statements and should not be used to introduce new material.

After the statements and cross-statements have been received, the Commission with the assistance of the presiding officer will issue a second prehearing order. This order will set out the procedures to be followed for the

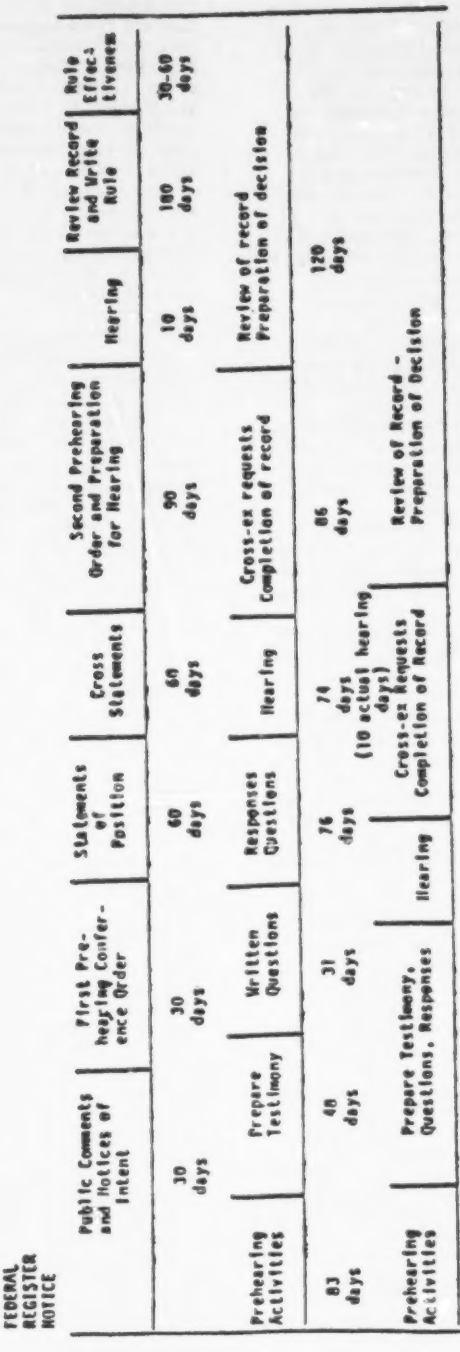
remainder of the hearing and may provide for further written submissions from the full participants, or for the scheduling of an oral hearing. If the Commission desires oral presentations, the participants may be further consolidated to ensure that the oral presentations will be efficient and useful. Unless different procedures are set out in the second prehearing order, the hearing will begin with delivery of prepared statements from the representatives, both technical and legal, of the groups into which the participants have been consolidated. These statements should succintly summarize the participants' views previously set forth in their statements and cross-statements. Participants should ensure that their representatives will be able to address the merits of the legal, technical and institutional issues that have been raised in this proceeding. After the prepared remarks the speakers will be questioned by the members of the Commission. Furthermore, other participants will be given the opportunity to submit written questions to the Commission for it, in its discretion, to ask of participants.

The Commission reserves the option of providing a final stage at which representatives of the participants may be cross-examined by other participants. The Commission will defer deciding whether to permit any cross-examination until after the hearing is over. To obtain cross-examination a participant will be required to identify the issue or issues as to which cross-examination is sought, and the representative or participant involved, and to demonstrate that cross-examination is necessary to prepare a record adequate for a sound decision.

Based on the material received in this proceeding and on any other relevant information properly available to it, the Commission will publish a proposed or final rule in the **Federal Register**. Any such final rule will be effective thirty days after publication.

Comments, notices of intent to participate and any other documents filed in this proceeding should be filed by serving a copy on the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C., 20555, Attention: Docketing and Service Branch. All filings will be available for public inspection in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C.

COMPARISON OF ESTIMATED SCHEDULE FOR RULEMAKING TO ASSESS COMMISSION CONFIDENCE WITH SCHEDULE FOR S-3 AND ACCESS RULE PROCEEDING



45 FR 13739
Published 3/3/80
Comment period expires May 2, 1980

Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions and Related Conforming Amendments

See Part 51 Proposed Rule Making.

45 FR 20491
Published 3/28/80
Comment period expires 5/27/80

No Significant Hazards Consideration

See Part 2 Proposed Rule Making

45 FR 34279
Published 5/22/80
Comment period expires 7/7/80

Possible Amendments to "Immediate Effective" Rule

See Part 2 Proposed Rule Making

45 FR 45916
Published 7/8/80
Comment period expires 9/8/80

45 FR 50349
Published 7/29/80
Comment period extended to 7/21/80

Possible Amendments to "Immediate Effectiveness" Rule

See Part 2 Proposed Rule Making

45 FR 50350
Published 7/29/80
Comment period expires 9/29/80

10 CFR Parts 50, 51 and 100

Modification of the Policy and Regulatory Practice Governing the Siting of Nuclear Power Reactors

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Advance Notice of Rulemaking: Revision of Reactor Siting Criteria.

SUMMARY: The Nuclear Regulatory Commission is considering the adoption of modified or additional regulations concerning the siting of nuclear power reactors. The intent is to reflect the experience gained since the original regulations on siting were published in 1962. The Commission intends that this task be completed expeditiously.

In this Notice, the Commission requests comments on seven of the nine recommendations contained in the "Report of the Siting Policy Task Force," NUREG–0625, August 1979. The Commission is also considering certain alternative approaches, described in this notice. Commenters are invited to choose between the proposed alternatives or suggest their own approaches. Where appropriate, some of these recommendations are supplemented with comments from the Advisory Committee on Reactor Safeguards (ACRS) and with questions to focus comment in areas that will be particularly helpful in developing the rule.

DATES: While comments and suggestions are welcome at any time, in order to be considered for this version of the proposed rule changes they must be received no later than September 29, 1980.

ADDRESSES: Written comments should be submitted to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Attention: Docketing and Service Branch.

Copies of the complete text of the "Report of the Siting Policy Task Force," NUREG–0625, are being mailed, along with a copy of this Advance Notice, to a number of individuals, groups, and appropriate State officials who may have a particular interest in commenting. Those who do not receive this mailing may obtain single copies without charge by writing to the Director, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

FOR FURTHER INFORMATION: Contact Mr. Richard P. Grill, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. (301) 443–5966.

SUPPLEMENTARY INFORMATION:

Background

The essential elements of nuclear power plant siting policy are derived from the Atomic Energy Act of 1954 and the National Environmental Policy Act of 1969 and are contained in 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," 10 CFR Part 51, "Licensing and Regulatory Policy and Procedures for Environmental Protection," and in 10 CFR Part 100, "Reactor Site Criteria." The regulations in Part 100 were promulgated by the Atomic Energy Commission in 1962 and have remained essentially unchanged since that time. The site suitability criteria utilized by the staff in performing licensing reviews have been based upon the principles embodied in Parts 50, 51 and 100 as modified by experience gained over the years by both applicants and staff, contributions from the public during the public hearing process, decisions of Atomic Safety and Licensing Boards (ASLB) and Atomic Safety and Licensing Appeal Boards (ASLAB), consultations with the Advisory Committee on Reactor Safeguards (ACRS), petitions for rulemaking received by the Commission, research funded by NRC, interaction with other Federal and State agencies, new legislation such as the National Environmental Policy Act (NEPA), the Clean Air Act, and other environmental legislation, as well as consultation with the Congressional Committees to which NRC is responsible. All of these have been important factors contributing to the current license review practice.

In June 1975, the Commission directed the staff to draw the siting policy and practice that had been developed over the years into a single statement. As a result, the staff undertook major efforts in a number of areas to provide a basis for revising Commission siting policy. Also, during this period, petitions for rulemaking[1] were received on reactor siting matters which were factored into the general staff effort. As an outgrowth of these efforts, the Commission directed, in August of 1978, a task force of senior staff members to develop a general policy statement on nuclear power reactor siting. From this, a number of recommendations emerged which are contained in the "Report of the Siting Policy Task Force," NUREG–0625, which has been considered by the Commission in developing this Advance Notice. Events during the past year, including the events at the Three Mile Island Nuclear Station, have made the NRC, the Congress, and the public increasingly concerned that past siting practice may not afford sufficient protection to the public health and safety. Considering revision of NRC siting policy using the Task Force's recommendations is, therefore, particularly relevant at this time.

Parallel to this planned revision of the siting regulations, the Commission is embarked upon rulemaking to improve the protection of the public through upgrading emergency planning

[1] Note.—In particular, the rulemaking initiated by this Advance Notice will consider the detailed recommendations contained in a Petition for Rulemaking filed by the Public Interest Research Group, *et al.* (PRM–100–2, June 1, 1976) and in part 4 of a Petition for Rulemaking filed by Free Environment, Inc., *et al.* (PRM–50–20, April 28, 1977).

requirements for new and existing plants. The effort in emergency planning is presently at the stage of a proposed rule for which public comments have been solicited (44 FR 75167, December 19, 1979). Another rulemaking which is related to but separate from this Advance Notice is the proposed rule on the consideration of alternative sites under NEPA Alternate Site Reviews (45 FR 24168, April 9, 1980). While this particular advance notice is focused upon siting criteria, it should be recognized that the revised rules on emergency planning and the rule changes for consideration of alternative sites will be applied in the licensing of future plants and, thus, will become factors considered in developing criteria that will be used in the selection of sites for future plants.

This rulemaking is intended for application to facilities for which an application for a construction permit is filed after October 1, 1979. This is in compliance with Section 108 of the 1980 NRC Authorization Bill. Nevertheless, the question arises as to whether additional safety features and changed operating procedures should be required for plants licensed on sites that do not meet the new criteria. The question of licensed reactors and reactors under construction in areas of high population density is being considered in a separate series of proceedings. (Order of May 30, 1980 concerning Indian Point Station). In the meantime, Commission decisions on the continued operation of existing plants are being made on a case-by-case basis in light of site characteristics, upgraded emergency plans, improved operator training, additional safety feature requirements, and other related considerations.

The Commission has directed the staff to review existing sites in order to examine whether additional modifications in operating procedures, design, or equipment might be necessary. For plants that do not yet have a Limited Work Authorization (LWA) or Construction Permit (CP), this discussion would be included in the Safety Evaluation Report (SER) or in an addendum to the SER. For plants that have construction permits or operating licenses, this review would be in the form of a report submitted to the Commission for its consideration in making case-by-case decisions.

It should be noted that the objectives of this proposed siting policy do not represent a radical departure from recent practice. A trend towards siting new plants away from highly populated areas and major industrial facilities has been underway for several years.

Because this rulemaking is directed at siting criteria and attempts to separate those criteria from engineered reactor safety systems, the intent of the Commission with regard to several issues should be stated here:

1. The original licensing policy for nuclear power plants permitted plant design features to compensate for unfavorable site characteristics and thus, over the years the net effect has been an increase in design safety features and a de-emphasis of site isolation (remote siting, as the concept was originally used). The Commission with these rules intends to re-emphasize the desirability of site isolation independent of engineered features which can compensate for unfavorable site characteristics.

2. Although the Commission is interested in establishing generic criteria for isolation which are independent of plant design, improved engineering design remains a valid, proven, and important way of reducing risk to the public from operation of a nuclear power plant. To retain the benefits of this well-developed technology, portions of the Commission's regulations will be revised to establish a minimum set of engineered safety features that will be required of all new plants. This action is now being initiated and will be separate from the rulemaking being supported by this Advance Notice but will be accomplished in parallel so that both rules can be implemented at approximately the same time.

3. Dose assessment should not be used as the dominant measure of site suitability because this approach has tended to de-emphasize isolation as an independent safety feature and, accordingly, is counter to the Commission's intent to reassert the importance of isolation. In other areas of the Commission's review of license applications dose assessment will continue to play an important role. In establishing an impact assessment which is as complete as possible the Commission's staff will continue to make calculations of the potential radiological consequences of releases which are specific to the plant under review. In reviewing emergency plans these same release scenarios will be used to improve the planning basis for emergency protective actions.

4. The applicant for a plant with minimum safety features on a site which meets all proposed siting criteria is not guaranteed issuance of a Construction Permit. Although this is a necessary qualification of an acceptable site-plant combination, the Commission's rules implementing the National Environmental Policy Act of 1969 require that before a Construction Permit can be issued there must be a demonstration, that, with regard to environmental considerations, there is no obviously superior alternative site. All final alternative sites are required to be potentially licensable from the safety standpoint according to available information (i.e., no safety siting criteria are violated). Under present practice, safety matters are only indirectly considered in the comparison of alternatives (except when population densities exceed 500 persons per square mile as discussed in Regulatory Guide 4.7) through plant cost estimates, but an alternate approach introduced later in this Advance Notice would change this practice.

5. The Commission recognizes that siting criteria, in general, are matters of national policy as well as national geography and population distribution and that other nations do not have the same flexibility in siting nuclear facilities as the United States. Thus, the Commission wishes to make clear that in emphasizing the use of isolated sites as part of U.S. nuclear siting policy, there is no implication that the siting policies and associated design requirements of other nations result in any less satisfactory protection of the public as judged in the respective national contexts.

In reference to Item #5 above, Commissioners Gilinsky and Bradford commented separately, as follows:

"We do not think that this reference to the adequacy or inadequacy of siting criteria employed by other countries should be included in this notice. Since the NRC has neither jurisdiction over foreign siting criteria nor any familiarity with foreign sites, these comments are purely gratuitous. Addressing this issue in the context of a rulemaking on domestic siting can only serve to raise questions about the Commission's willingness to temper its protection of the U.S. public so as to accommodate foreign nuclear programs."

The Commission is also considering certain identified alternative approaches to several of the Siting Policy Task Force's recommendations. In addition, the Advisory Committee on Reactor Safeguards has submitted comments on each of the Task Force's recommendations and on the goals which guided their development.[2] In order to present these matters clearly, the following format is utilized:

Item A, B, C, etc.:
Alternatives (Task Force Recommendation alone if no other alternatives are present):

[2] Letter to Chairman John F. Ahearne from Milton S. Plesset, Chairman, Advisory Committee on Reactor Safeguards, dated February 14, 1980.

ACRS Comment on Task Force Recommendations (if any):
Additional Questions (if any):

Additional questions have been prepared, where appropriate, to help focus comment along directions that the staff believes will be most useful. In particular, several questions focus on the substance of the ACRS comments.

Comments from all interested persons are requested on all of the entries under each item and will be considered on any aspect of improving the safety of nuclear power plant siting that the public perceives as important. Priority for this rulemaking, however, will be given to those comments bearing on the goals established by the Task Force (Item "A"); seven of the nine Task Force recommendations, including alternative approaches and additional questions (Items "B" through "I", except "E").

Item A

The three conceptual goals developed and used by the Task Force in reaching their recommendations were (NUREG–0625, page lii)

1. To strengthen siting as a factor in defense in depth by establishing requirements for site approval that are independent of plant design consideration[s]. The present policy of permitting plant design features to compensate for unfavorable site characteristics has resulted in improved designs but has tended to de-emphasize site isolation.

2. To take into consideration in siting the risk associated with accidents beyond the design basis (Class 9) by establishing population density and distribution criteria. Plant design improvements have reduced the probability and consequences of design basis accidents, but there remains the residual risk from accidents not considered in the design basis. Although this risk cannot be completely reduced to zero, it can be significantly reduced by selective siting.

3. To require that sites selected will minimize the risk from energy generation. The selected sites should be among the best available in the region where new generating capacity is needed. Siting requirements should be stringent enough to limit the residual risk of reactor operation but not so stringent as to eliminate the nuclear option from large regions of the country. This is because energy generation from any source has its associated risk, with risks from some energy sources being greater than that of the nuclear option.

ACRS comments on the Siting Policy Task Force goals.—With regard to the [three Task Force] goals discussed above, the ACRS agrees that siting, as a factor in the defense in depth philosophy, should be strengthened. However, the ACRS believes that any minimum requirements for parameters such as the exclusion zone radius, surrounding population density, or distance from population centers should be established, if possible, within the framework of an overall Nuclear Regulatory Commission safety philosophy for future reactors.

Such a philosophy should be based on preestablished Commission objectives for acceptable risk both to individuals and society. This will, of necessity, include consideration of matters such as the potential effects of a broad spectrum of reactor accidents, the identification of an ALARA (As Low as Reasonably Achievable) criterion for the reduction of risk from accidents, and a general statement of policy concerning the objectives to be sought in reactor design with regard to the prevention and the mitigation of accidents.

The establishment of demographic-related site criteria will inevitably require a considerable amount of judgment. However, the choice will be less arbitrary if made within the framework of an overall NRC safety policy. The ACRS believes that an overall NRC safety philosophy is also needed in connection with the third objective of the Task Force, namely that of selecting sites to minimize the risk from the utilization of electricity generating sources.

The ACRS believes that well-founded nuclear power plant siting policy and practice are a national as well as a regional need. The Committee suggests that as part of a broad approach to LWR [(Light Water Reactor)] siting, the NRC should explore the possible development of a nationwide program to identify a bank of near-optimal sites regionally distributed for various types of energy-generating plants. By combining considerations of acceptable risk, the risks from various energy sources, and the national needs for energy, together with other relevant factors, a better long-term for determining appropriate criteria for LWR siting should be possible. In the absence of such a broad approach, the ACRS recommends that changes to past siting policy be *interim* in nature and be designed primarily to provide an acceptable basis for near-term decisionmaking.

Additional Questions Relative to Item A

1. Should the present policy of permitting plant-specific design features to compensate for unfavorable site characteristics be continued, or should site approval be independent of plant design considerations?

2. Should considerations of acceptable risk to the public and the risks from other energy sources be included in reactor siting decisions? If considerations of acceptable risk are included, should they be based primarily on the risk to be maximally exposed individual or on the overall risk to the exposed population?

3. Should site acceptability criteria be nationally uniform or regionally varying? If regionally varying, how large should be the regions considered and what are the important regional variables (e.g., need for power, overall population, availability of remote sites? Which should be considered?

Item B

Alternative A

Task Force Recommendation 1 (NUREG–0625, pages 46–50 and 64–65)

Revise Part 100 to change the way protection is provided for accidents by incorporating a fixed exclusion and protective action distence and population density and distribution criteria.

1. Specify a fixed minimum exclusion distance based on limiting the individual risk from design basis accidents.[*] Furthermore, the regulations should clarify the required control by the utility over activities taking place in land and water portions of the exclusion area.

2. Specify a fixed minimum emergency planning distance of 10 miles. The physical characteristics of the emergency planning zone should provide reasonable assurance that evacuation of persons, including transients, would be feasible if needed to mitigate the consequences of accidents.

3. Incorporate specific population density and distribution limits outside the exclusion area that are dependent on the average population of the region.

4. Remove the requirement to calculate radiation doses as a means of establishing minimum exclusion distances and low population zones.

Alternative B

Consideration should be given to provision of two thresholds for each parameter. One would be the acceptance limit. Any site that does not meet that acceptance limit would be disapproved regardless of other considerations. The other would be an acceptance floor—any site that did not exceed that floor would be approved with respect to that criterion. Between these extremes would be a middle ground where residual risks would be taken into account in deciding whether to approve a site. The thresholds would

[*] Note.—The Task Force Report also discusses accidents larger than "design basis" accidents (NUREG–0625, page 47) in regard to providing significant additional protection by increasing the exclusion distance.

be nationwide, rather than varying with regions. (Commenters may refer to this alternative as the "three-tier" approach.)

The rationale of such a "three-tier" approach rests on the view that even when the population density is not prohibitively high in any absolute sense, one should try to do better. The alternative sites evaluation process is suited to determination of how well one can reasonably do in a particular area under consideration. The process would illuminate specific alternatives. *A priori* judgments on a regional basis would be avoided. In view of the inherent imprecision of the comparative evaluations, the comparative judgments would focus only on gross differences in the raw numbers (on population density and distribution, etc.): deatiled dose calculations would not serve a useful purpose in this context and are not intended.

ACRS comment on Task Force Recommendation 1.—"Part 1. The ACRS believes that the specification of a minimum exclusion distance should include consideration of the risk from all accidents, not just design basis accidents. It should include consideration of the number of reactors at the site. Any long-term criterion concerning a minimum exclusion distance would best be established within the framework of a general NRC policy on LWR safety. Interim guidance could be determined with the benefit of information developed from NRC Staff studies and information submitted during a proposed rulemaking on interim changes in the site criteria.

Part 2. The ACRS generally supports this recommendation with the understanding that appropriate attention would be given to potential problems at greater distances.

Part 3. The ACRS believes the wording of this recommendation is vague and it could be interpreted to be excessively restrictive or very permissive with regard to demographic requirements. Additional information is needed to establish interim criteria of this sort within the context of an NRC rule. Among the factors which require consideration are the following:

(a) If some regions of the country are permitted to employ higher maximum population densities, should there be any additional requirements for such plants in design, operation, or emergency planning? If not, what basis will be provided for designating regionally dependent acceptable risks?

(b) Should the NRC place a similar or a substantially greater emphasis on improbable, large accidents in its siting (and design) requirements than is utilized for other new societal activities posing hazards similar in magnitude and probability?

(c) How should the effectiveness of emergency measures, such as evacuation, sheltering and decontamination, be ascertained and factored into a judgment concerning minimum exclusion and emergency planning distances?

(d) Should meteorology not be given consideration in regard to the development of siting criteria?

Part 4. The ACRS agrees with the Task Force that the approach used for the past two decades has not provided enough emphasis on site isolation. The Committee believes that the emphasis on engineered safety features to meet Part 100 for the postulated accident without direct consideration of other, more serious possibilities has led to a less-than-optimum approach to safety. However, if the recommendation of Part 4 is adopted, some alternative means of determining the need and adequacy of engineered safety features will be required.

In summary, although the ACRS agrees that the specification of minimum exclusion and emergency planning distances and population density and distribution limits is a commendable objective, and that interim criteria should be developed, the Committee believes that the adequacy of such parameters will depend on the safety related design and operational requirements and on the effectiveness of emergency measures. Also, the ACRS believes the establishment of such parameters involves the assumption of some accepted band of risk which should be specified. While the ACRS is not opposed to removal of the Part 100 requirement for caculation of radiation doses or to the specificatin of regionally dependent acceptable population densities, the Committee believes these matters need in-depth evaluation.

Additional Questions Relative to Item B

1. Should a uniform, minimum exclusion distance, applicable to all reactors, be established? Whether uniform or plant-specific should the minimum exclusion distance be based on limiting the individual risk from design basis accidents? If not, on what should it be based?

2. Should there be a single population density/distribution limit set applicable to the entire country, or should such limits recognize different demographic characteristics of regions and be dependent upon those characteristics?

3. Should any criteria established to limit acceptable population densities or distributions be applied only to populations current at the time of site approval or should they also be applied to projected post licensing populations (for example, to projected populations over the expected operating lifetime of the plant)? Should the same criteria be applied to projected populations as to populations current at the time of site approval? If not, how should the criteria for projected populations be related to those for populations current at the time of site approval?

4. Is the graduated approach with regionally differentiated populated density and distribution limits (as recommended by the Task Force) or the alternative nation-wide "three-tier" approach a more reasonable way to proceed? Would a different approach be more appropriate? If so, what approach? If the regional approach is recommended, how should the region be defined?

5. NUREG–0625 gives examples of the following specific population density and distribution limits which would vary regionally: out to five miles from the plant, the greater of 100 persons per square mile or ½ the average population density of the region; from five to ten miles, the greater of 150 persons per square mile or three-quarters of the average population density of the region and no more than one-half of the allowed total in any single 22½° sector. Would this graduated, regionally dependent approach be desirable? What other sets of values would be a more reasonable expression of population density and distribution limits?

6. If a "three-tier" approach were utilized as set out in the alternative staff approach, what values should be utilized for the upper (exclusionary) and lower (*de minimis*) thresholds? (For example, the 100, 150 and 400 persons per square mile values could be considered *de minimis* thresholds. The corresponding exclusionary limit could be set—for example—at 250, 375 and 1,000 persons per square mile. A more conservative approach might use 100, 150 and 400 as exclusionary limits and establish *de minimis* thresholds of 30, 50 and 100 persons per square mile.)

Item C

Alternative A

Task Force Recommendation 2
(NUREG—0625, pages 51–52)

Revise Part 100 to require consideration of the potential hazards posed by man-made activities and natural characteristics of sites by establishing minimum standoff distances for:

1. Major or commercial airports,
2. Liquified natural gas (LNG) terminals,

3. Large propane pipelines.
4. Large natural gas pipelines.
5. Large quantities of explosive or toxic materials.
6. Major dams
7. Capable faults.[4]
[8. Liquified propane gas (LPG) terminals][5]
[9. Navigable water ways which are used for the transportation of hazardous materials.][5]
[10. Other nuclear power plants][5]

Alternative B

Consideration should be given to provision of two thresholds for each parameter. One would be the acceptance floor. Any site which does not meet the minimum acceptance floor for each factor would be disapproved regardless of other considerations. The other threshold would be a *de minimis* threshold—any site that exceeded that threshold would be approved with respect to that criterion. Between these extremes would be a middle ground where residual risks could be taken into account in deciding whether to approve a site. (Commenters may refer to this alternative as the "three-tier" approach.)

ACRS comments on Task Force Recommendation 2.—"This recommendation proposes minimum standoff distances for potential hazards posed by man-made activities and natural characteristics. The Committee believes that such a recommendation is appropriate but the list is incomplete. For example, LNG terminals are included but not LPG. Similarly, hazardous cargo on rivers is not mentioned.[6]

In addition, the proposed approach lacks an adequate rationale for specific numbers suggested. A distance of at least 12.5 miles from all capable faults, with no distinction as to fault size, is proposed, as is a specification that no reactor sites located on a flood plain should be closer than five miles downstream of a major dam. The reason why either of these two proposed numbers is suitable is not clear to the ACRS. For example, dams many miles away could be equally or more dangerous to a nuclear plant; on the other hand, small capable faults nearer than 12.5 miles might not pose significant design problems.

It is noted that the recommendation does not provide standoff distances between nuclear plants.[6] The potential adverse influence of one plant on its neighbors in the event of a serious accident requires consideration in design.

Additional Questions Relative to Item C

1. What would be an appropriate basis for specifying standoff distances:
a. A single minimum standoff distance applicable to all categories?
b. A separate minimum standoff distance for each category?
c. The "three-tier" approach with a separate set of thresholds for each category?
d. Some other basis (specify)?

2. What man-made activities or natural characteristics, other than those discussed above, might require that minimum standoff distances be established? Should other nuclear facilities be considered in setting criteria for standoff distances?

3. What specific standoff distance or set of thresholds would be appropriate for each category?

Item D

Task Force Recommendation 3
(NUREG–0625, page 53)

Revise Part 100 by requiring a reasonable assurance that interdictive measures are possible to limit groundwater contamination resulting from Class 9 accidents within the immediate vicinity of the site.

ACRS Comment on Task Force Recommendation 3.—The ACRS supports the recommendation. However, the Committee notes that the current wording is subject to a range of interpretations which could include, for example, the necessity for developing interdictive measures for particulate fallout or rainout that could result in groundwater contamination. The Committee recommends that the wording of the recommendation be made more explicit.

Item E

Task Force Recommendation 4
(Deferred; text is included for completeness)

Revise Appendix A to 10 CFR Part 100 to better reflect the evolving technology in assessing seismic hazards.

It is planned to implement this recommendation in a separate action in two or three years. Comments are not solicited at this time on the revision of Appendix A to Part 100. For additional information on this recommendation consult the Report of the Siting Policy Task Force (NUREG–0625, page 54).

Item F

Task Force Recommendation 5
(NUREG–0625, pages 55–56)

Revise Part 100 to include consideration of post-licensing changes in offsite activities: 1. The NRC staff shall inform local authorities (planning commission, county commissions, etc.) that control activities within the emergency planning zone (EPZ) of the basis for determining the acceptability of a site.

2. The NRC staff shall notify those Federal agencies as in Item 1 above that may reasonably initiate a future Federal action that may influence the nuclear power plant.

3. The NRC staff shall require applicants to monitor and report potentially adverse offsite developments.

4. If, in spite of the actions described in Items 1 through 3, there are offsite developments that have the potential for significantly increasing the risk to the public, the NRC staff will consider restrictions on a case-by-case basis.[7]

ACRS Comments on Task Force Recommendation 5.—This recommendation relates to post-licensing changes in offsite activities but does not specify what population/time period would be used. For example, would it be the present population, that at the projected end of life of the plant, or an average over the time period during which the plant will be operated? This should be clarified. The recommendation also does not specify what is considered to be a "significant increase in risk." Another consideration that might be taken into account is the nature and use of the land surrounding a site. Whether neighboring land is used for residential or industrial purposes, and whether it is fertile land or a desert, could also be important.

Additional Questions Relative to Item F

1. What, if any, legislative authority should or could be given to NRC in order to: a. Assure population densities or groupings around nuclear plants remain within acceptable criteria during the

[4] Note.—Although comments are requested here with respect to standoff distances for capable faults and will be considered in a later action, the complexity of this topic and the commitment of the cognizant staff to other activities of pressing importance require that consideration of this topic be deferred for two to three years (see item "E").

[5] Note.—Added at the suggestion of the Advisory Committee on Reactor Safeguards.

[6] Note.—Added to list in Task Force Recommendation 2. See footnote 5.

[7] Note.—The upgraded emergency planning requirements now being implemented should reveal information about such projects. If any such developments are noted by any means the Commission will take whatever action it deems appropriate including possible shutdown of the plant in question.

operational lifetime of the plant.

b. Preclude installation of activities or facilities that might be hazardous to the plant during its lifetime?

2. What actions should be considered by the Commission, and under what circumstances should these actions be taken if, at some time after a licensed nuclear power plant begins operating, the surrounding population no longer satisfies established density or distribution criteria?

3. Under what circumstances should the Commission require changes in operating procedures (including plant shutdown) or engineered design changes to accommodate the construction of facilities (including other nuclear power plants) or changes in existing hazardous offsite activities, after a licensed nuclear power plant begins operating, which might compromise plant safety?

Item G

Alternative A

Task Force Recommendation 6
(NUREG–0625, page 57–59)

Continue the current approach relative to site selection from a safety viewpoint, but select sites so that there are no unfavorable characteristics requiring unique or unusual design to compensate for site inadequacies.

Alternative B

In this alternative, marginal differences in safety aspects of a site would be considered in the NEPA alternative site analysis.

Under the recommendation of the Task Force (Alternative A), staff practice would change to preclude consideration of sites which have characteristics that do not meet safety criteria, even if they are amendable to unique or unusual compensating engineering design or feature which would offset the undesirable site characteristic. On the other hand, for sites that meet all of these criteria no further consideration of marginal differences in safety would be contemplate

The alternative B approach would recognize the possibility that some compensating engineering designs or features may not be so unusual, unique, or involve uncertainties significant enough to be rejected on an absolute standard, but nevertheless should be accepted only if there is no otherwise comparably attractive alternative site without the characteristics requiring the compensatory engineering designs or features of concern. In such cases, the alternative site review under NEPA should permit consideration of these matters.

ACRS Comments on Recommendation 6.—The Committee suggests that the phrase, "unfavorable characteristics requiring unique or unusual design," be clarified. Many characteristics that are "unfavorable" can be readily compensated for by design, including some of an "unusual" nature. Design features to provide permanent site improvements should be permissible when suitably reliable. Perhaps these problems could be solved by deleting the word, "unfavorable," and substituting the work, "unproven," for "unique or unusual".

Additional Questions Relative to Item G

1. If all the characteristics of a site meet the criteria upon which threshold acceptability have been established (such as the criteria discussed in Items B and C), should the site be considered acceptable from a safety standpoint, or should the possibility of compensating engineering features be considered in selecting between alternate sites?

2. Should site characteristics, the impact of which on the safety of plant operation can be assessed quantitatively only with great uncertainty, if at all, be considered in site approval decision? If so, on what basis should such characteristics be evaluated?

3. Of the two options described—the Siting Policy Task Force's Recommendation 6 and Alternative B—which is more appropriate?

Item H

Task Force Recommendation 7
(NUREG–0625, page 60)

Revise Part 100 to specify that site approval be established at the earliest decision point in the review and to provide criteria that would have to be satisfied for this decision to be subsequently reopened in the licensing process.

Additional Questions Relative to Item H

1. At what point in the licensing process should a binding site approval decision be made?

2. Once a site has been approved, when in the licensing process, under what conditions, and using what criteria, should the questions of site acceptability be allowed to be reopened?

Item I

Task Force Recommendation 8
(NUREG–0625, pages 61–62)

Revise Part 51 to provide that a final decision disapproving a proposed site by a state agency [acting within proper state authority] [1] whose approval is fundamental to the project would be a sufficient basis for NRC to terminate review. Such termination of a review would then be reviewed by the Commission.

Additional Questions Relative to Item I

1. Should the Commission retain the flexibility to address site disapprovals by state agencies on a case-by-case basis instead of modifying the regulations?

2. Should this alternative be bounded so that only actions taken by specific state agencies or with specific reasons would be considered? If so, which ones?

Item J

Task Force Recommendation 9
(Deferred: text is included for completeness)

Develop common bases for comparing the risks for all external events.

This recommendation may be implemented by the NRC at a future time. No comments are solicited at this time, but any comments are welcome. For additional information on this recommendation consult the Report of the Siting Policy Task Force (NUREG–0625, page 63).

All comments received will be evaluated by the NRC staff. The staff will utilize the comments in preparation of recommendations and proposed rule changes for consideration by the Commission.

45 FR 65474
Published 10/2/80
Comment period expires 12/31/80
(Correction Published 10/24/80)

10 CFR Part 50

Domestic Licensing of Production and Utilization Facilities; Consideration of Degraded or Melted Cores in Safety Regulation

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: The U.S. Nuclear Regulatory Commission is considering amending its regulations to determine to what extent commercial nuclear power plants should be designed to cope with reactor accidents beyond those considered in the current "design basis accident" approach. In particular, this rulemaking would consider the need for nuclear

[1] **Note.**—Language added to the recommendation of the Siting Policy Task Force on the advice of the NRC's Office of the General Council.

power plant designs to be evaluated over a range of degraded core cooling events with resulting core damage and the need for design improvements to cope with these events.

This advance notice of proposed rulemaking is being issued to invite advice and recommendations on several questions concerning design and operational improvements for dealing with degraded core cooling. Therefore, the preliminary views expressed in this notice may change in light of comments received. In any case, there will be an opportunity later for additional public comment in connection with any proposed rule that may be developed by the Commission.

DATES: The comment period expires December 31, 1980.

ADDRESSES: Interested persons are invited to submit written comments and suggestions to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Copies of comments received by the Commission may be examined in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C. Comments may also be delivered to Room 1121, 1717 H Street NW., Washington, D.C., between 8:15 a.m. and 5:00 p.m.

FOR FURTHER INFORMATION CONTACT:
M. S. Medeiros, Jr., Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 or telephone (301) 443–5913.

SUPPLEMENTARY INFORMATION:

Historical Background

The Nuclear Regulatory Commission (NRC) is responsible for licensing and regulating nuclear power plants. Before a nuclear power plant can be built at a particular site, a construction permit must be obtained from the NRC. As a major part of the application for a construction permit, the applicant files a Safety Analysis Report. This report presents the design criteria and preliminary design information for the proposed nuclear power plant and provides information on the proposed site. The report also discusses various abnormal conditions and accident situations and describes safety features to be provided to prevent accidents or, if they should occur, to mitigate their effects on public health and safety.

In nuclear power plants, large amounts of radioactive material are generated during fission of nuclear reactor fuel. Although this radioactive material generally remains in the fuel pellets, significant amounts can be released to the reactor coolant during accident conditions. For appreciable amounts of radioactive material to be released from the fuel, it must experience damage from one or more of several possible causes. For example, a hydraulic-mechanical accident at normal fuel temperatures can burst fuel cladding resulting in release of radioactive material normally retained in the gap between the fuel pellets and the fuel clad. A more serious type of accident involving higher fuel temperatures might, in addition to rupturing fuel cladding, cause oxidation of the cladding. This, in turn, would cause hydrogen to be generated and released which would compound the severity of the accident. A still more serious accident might involve very high fuel temperatures and oxidation of a large fraction of the core's zirconium. In this case, not only would large amounts of hydrogen be released to the containment building, but other thermal reactions could result in the release of radioactive material normally held captive in the fuel pellets. Finally, an accident so severe that core melting occurs could release large amounts of radioactive material to the environment if reactor containment integrity were also to be lost.

Based on these considerations, a broad range of nuclear power plant abnormal conditions and accidents with the potential to cause fuel clad damage and release of radioactive material to the environment has been identified and categorized for analysis. Attempting to prevent abnormal conditions and accidents and mitigating their potential consequences have been the primary objectives of nuclear power plant safety design. The Safety Analysis Report is a key analysis document supporting the adequacy of this aspect of nuclear power plant design.

As discussed in Title 10, Chapter 1, Code of Federal Regulations, § 50.34(a), in the Safety Analysis Report the applicant is required to determine margins of safety for both normal and abnormal operations and to determine "the adequacy of structures, systems, and components provided for prevention of accidents and the mitigation of the consequences of accidents." To assist the applicant in complying with this regulation, the NRC has published Regulatory Guide 1.70, Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants,[1] which describes the information to be provided in the Safety Analysis Report. In particular, section 15 of Regulatory Guide 1.70 provides guidance to an applicant concerning "design basis assumptions acceptable to the NRC for purposes of determining adequacy of the plant design to meet 10 CFR Part 100 criteria." Regulatory Guide 1.70 explains that these design basis assumptions can, for the most part, be found in regulatory guides that deal with radiological releases and suggests use of Regulatory Guides 1.3 and 1.4, Assumptions Used for Evaluation of the Potential Radiological Consequences of a Loss-of-Coolant Accident.[2] Regulatory Guide 1.70 further states that "This analysis should be referred to as the 'design basis analysis.'" Operating events corresponding to design basis assumptions are termed "design basis accidents," and satisfactory analysis conclusions concerning them allow a judgment that the facility can be operated without undue risk to the health and safety of the public.

It should be noted that these events are analyzed primarily for the purpose of establishing the adequacy of engineered safety features, such features being those structures, systems, and components designed into a plant to mitigate the consequences of postulated design basis accidents, and which supplement other plant features designed to meet performance specifications for normal operations and anticipated abnormal conditions.

In the Safety Analysis Report the applicant is not required, however, to explicitly analyze accidents more severe than the design basis accidents.[3] This approach was based on the assumption that such accidents are of sufficiently low probability that mitigation of their consequences is not necessary for public safety. This low probability was thought to result from the "defense in depth" approach that requires conservative design, multiple physical barriers, quality assurance for design, manufacture and operation, and continued surveillance and testing to prevent such accidents.

Furthermore, in reviewing reactor plant designs using the "design basis accident" approach, the NRC does not review all structures, systems, and components but rather reviews, in varying levels of detail, only those considered "safety grade" by the applicant submitting a Safety Analysis Report. Items considered by the applicant to be outside the scope of design basis accident analyses are

[1] Available from the U.S. Nuclear Regulatory Commission, Washington, DC 20555.

[2] There are other design requirements which would presuppose events where significant core damage and release of radioactive material has occurred. For example, radioactive source terms of Technical Information Document TID-14844 Calculation of Distance Factors for Power and Test Reactor Sites,[3] which imply a major reactor accident, are used to judge design adequacy of various engineered safety features and certain other plant systems and components.

[3] Available from National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22151.

generally not considered to be "safety grade" and are not reviewed by the NRC to see whether they will perform as intended or meet various dependability criteria. This method of classification is based on the notion that things credited in the analysis of a design basis event or specified in the regulations are important to safety and thus are "safety grade" while all else is "non-safety grade." Non-safety grade items do not receive continuing regulatory supervision or surveillance to see that they are properly maintained or that their design is not changed in some way that might interact negatively with other systems. Instead, these items simply receive what attention may be dictated by routine industrial codes and by desires to enhance plant availability.

Historically, a further assumption in design review and licensing was that if reactor plant systems can handle large-scale design basis accidents, they can also handle a spectrum of smaller accidents that are regarded as being "within the design envelope."

The accident at Three Mile Island resulted in core damage more severe than that considered in current design basis events [4] and has shown the need to re-examine these historical approaches to analyzing reactor plant design and plant accidents. The October 1979 Report of the President's Commission on the Accident at Three Mile Island [5] recommended that in-depth studies be initiated on the probabilities and consequences (onsite and offsite) of nuclear power plant accidents, including the consequences of core meltdown. This report recommended that these studies include a variety of small-break, loss-of-coolant accidents and multiple-failure accidents, with particular attention to human failures. The report stated that "from these studies may emerge desirable modifications in the design of plants that will help prevent accidents and mitigate their consequences. For example consideration should be given to equipment that would facilitate the controlled safe venting of hydrogen gas from the reactor cooling system" and "consideration should be given to overall gas tight enclosure of the let-down/make-up system with the option of returning gases to the containment building."

Similarly, the January 198[illegible] report, Three Mile Island, A Report to the Commissioners and to the Public,[6] states, "* * * we have come far beyond the point at which the existing [illegible] design basis accident review [illegible] is sufficient. The process is not [illegible] enough to pinpoint many important design weaknesses or to address all the relevant design issues. Some important accidents are outside or are not adequately assessed within the 'design envelope'; key systems are not safety related; and integration of human factors into the design is grossly inadequate."

Commission's Intentions

Accordingly, it is the Commission's intent to determine what changes, if any, in reactor plant designs and safety analyses are needed to take into account reactor accidents beyond those considered in the current design basis accident approach. Accidents under consideration include a range of loss of core cooling, core damage, and core melting events both inside and outside historical design envelopes. Furthermore, the Commission will consider whether to require more coherent consideration of this range of core damage events in the design of both normal operating systems and engineered safety features. Therefore, this advance notice of proposed rulemaking is being published to provide the regulated industry and the public an opportunity to provide advice and recommendations to the Commission on what should be the content of a regulation requiring improvements to cope with degraded core cooling and with accidents not covered adequately by traditional design envelopes. The rulemaking proceeding will address the objectives of such a regulation, the design and operational improvements being considered, the effect on other safety considerations, and the costs of such design improvements compared to expected benefits.

Recognizing the need for prompt action to correct specific deficiencies identified during the Three Mile Island accident and subsequent investigations, the Commission is publishing a proposed interim rule that would require certain interim improvements to better cope with degraded reactor cores. That proposed interim rule should not be viewed as prejudging the final action concerning this advance notice of proposed rulemaking, and comments should be framed accordingly.

In addition to this **Federal Register** Notice, the Commission's Office of Standards Development is making a direct mailing to affected licensees and other known interested persons to ensure that they are aware of this advance notice of proposed rulemaking.

Summary of Features Being Considered for Proposed Rule

The Commission is considering initiating rulemaking that would require that a broader range of accidents of both lesser and greater severity than the design basis accident, including a fully melted core, be considered in plant design, plant operation, and reactor safety analyses.

Specific Considerations

Advice and recommendations on a proposed rule reflecting the foregoing feature and on any other points considered pertinent are invited from all interested persons. Comment is also invited on the extent to which any additional measures should be backfitted. Comments and supporting reasons are particularly requested on the following questions:

1. If loss of core cooling and resultant core damage occur in a nuclear power plant, there are certain predictable consequences. Can these consequences be mitigated substantially, and the risk of severe public health danger thereby reduced substantially, by practical design improvements? If not, why not, or, if so, what design improvements can be made and at what estimated cost? How would your recommendations affect other safety considerations?

"2. The Three Mile Island accident was terminated after the core was damaged severely but before substantial melting occurred, a condition beyond the current design-basis-accident events considered in the safety analysis. Should the NRC require that events of this type be considered in future safety analyses? If not, why not, or, if so, what criteria would you impose to judge design acceptability?

"3. Although the consequences of core-melt accidents have been considered to some extent in assessing nuclear power plant safety, such as in requirements for siting, emergency response plans, and certain engineered safety features, explicit consideration of the capability of current designs and casualty procedures to cope with core-melt accidents has not been a part of safety analysis scrutiny by the NRC. Should core-melt accidents be specifically evaluated in safety analysis reviews, and, if so, to what extent, or, if not, why not?

"4. Recognizing that there can never be complete assurance that only analyzed events as delineated in a Safety Analysis Report will occur, what additional analyses, procedures, or design features would you propose to

[4] However, there was no release of fission products from the core meltdown events that exceeded those specified in 10 CFR Part 100. [illegible]-1644.

[5] "The Need for Change: The Legacy of TMI," available from the U.S. Government Printing Office, Washington, D.C. 20402.

[6] Copies may be obtained from the GPO Sales Program, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

mitigate fuel damage accidents in the range from extensive clad perforation without oxidation, through a few percent clad oxidation, through extensive oxidation to full core meltdown? Would you recommend different and perhaps overlapping design features depending on the severity of core damage to be coped with?

5. To what extent should reactor design and reactor safety analysis account for engineered safety features not working at all, not working well, or being defeated by the operator, resulting in severe core damage? What limits should be placed on multiple failure and operator error assumptions made in safety analyses and how should probabilistic risk assessment be used to determine these limits?

6. Should the NRC require construction, at each nuclear reactor plant site, of a new structure for controlled filtered venting of the reactor containment structure? Would you limit the function of such a new structure to filtering particulates, elemental iodine, and inorganic iodine or would you include adsorption bed systems using charcoal or other processes so that organic iodine and noble gases could also be trapped? What quantities and release rates of gases and particulates would you design such a structure to handle and at what removal efficiency and cost? Do the potential reductions in risk expected from such a structure offset potential increases in risk that may materialize from incidents such as inadvertent operation or the concentration of hydrogen in the filtering apparatus?

7. Should the NRC require incorporation into containment design, systems for controlling combustion of hydrogen? Do you favor methods of control that suppress combustion or do you favor controlled burning? If you favor suppression of combustion, what techniques would you recommend and should they vary as a function of the design capability of current containments? If you favor controlled burning, do you recommend open flames, spark plugs, catalytic combustors, or some other means? What percent of zirconium oxidation in the core and at what rate would you design for? Would you respond differently for different reactor or containment types? If so, what differences would you recommend?

8. Would you recommend that all nuclear power plants operate with a nitrogen-enriched containment atmosphere as some BWR plants currently do? Why or why not and, if not, to which types of containment, if any, would you limit required nitrogen enrichment?

9. Should the NRC require incorporation into containment design, a core retention system to mitigate the consequences of core meltdown by, for example, increasing resistance to molten core debris penetration and thereby substantially reducing gas, vapor and aerosol generation to less than that which occurs when core debris is allowed to interact with concrete? Assuming a core retention system is required, do you favor a device that delays melt-through of the containment basemat, or a device that permanently retains core debris within the containment building? If you favor delay of core melt-through, do you recommend refractory materials (such as MgO, ZrO_2) to protect the containment concrete basemat, or do you recommend some other means? If you favor permanent retention of core debris, do you recommend using refractory materials in combination with cooling systems that rely either on natural convective cooling or forced pumping of coolant around the extremities of the refractory material, or do you recommend some other concept? Would you respond differently for different containment types? If so, what differences would you recommend? How do your recommendations affect other safety considerations?

10. Should the NRC require design changes to account for increased radioactive material that may be transported during an accident by systems normally functioning with much lower levels of radioactivity such as the steam and residual heat removal systems and the containment drainage system?

11. Should the NRC require more extensive operator training, strict literal compliance with new and improved detailed operating procedures, increased reliability of emergency cooling or decay heat removal capability, and expanded control room minimum manning as alternatives or supplements to degraded cooling design improvements?

12. Should the NRC require an alternate, add-on, self-contained decay heat removal system to prevent degradation of the core or to cool a degraded core, in contrast to the previously discussed schemes which are aimed toward mitigating the consequences of degraded core cooling? How would such a decay heat removal system affect other safety considerations?

13. Should the NRC require systems such as the makeup and purification systems to be located in a leak-tight building? Would such a requirement add to or detract from overall plant safety?

14. What design, quality and seismic criteria would you recommend for any additional systems to prevent the potential breeching of containment such as systems for controlled filtered venting, hydrogen combustion control, and core retention mentioned in previous questions? Do you favor evaluating designs of such systems on a realistic basis, as opposed to the conservative method used to evaluate engineered safety features? Do you favor establishing design criteria for such systems that are equally stringent, less stringent, or more stringent than those applied to engineered safety features? Please explain your response in terms of criteria you would recommend, including consideration of redundancy, diversity, testability, inspectability, and structural design limits (including seismic requirements).

15. Can probabilistic analysis be used both as an aid in determining and comparing the adequacy and usefulness of the several features mentioned in previous questions and as an aid in determining the design criteria and reliability requirements for these features? How do you view the utility of quantitative risk analysis in better understanding the safety advantages and disadvantages of the several features mentioned in previous questions?

16. In weighing the costs of design and operational improvements to cope with degraded core cooling against the benefits of their use, what quantitative methods or other guidance would you suggest to facilitate preparation of a useful value-impact assessment? Would you consider useful or appropriate comparisons between nuclear power plant risks and other risks to which people are exposed?

17. What aspects of degraded cooling or melted-core accidents are sufficiently unknown or uncertain as to impede design and analysis of mitigating systems, thus requiring additional research or experimentation?

18. The NRC has under way a separate rulemaking proceeding concerning reactor siting and an emergency planning rule has recently been approved. If you are familiar with these separate activities, how would you modify present and proposed requirements for emergency planning and reactor siting if accidents beyond the present design basis were to be considered in nuclear power plant safety analyses?

45 FR 79820
Published 12/2/80
Comment period expires 1/16/81

10 CFR Parts 50, 51, and 100

Environmental Impact Statement for Reactor Siting Criteria

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Notice of Intent to Prepare an Environmental Impact Statement for Revision of the Regulations Governing the Siting of Nuclear Power Plants.

SUMMARY: On July 29, 1980, the Nuclear Regulatory Commission published for comment "Advance Notice of Rulemaking: Revision of Reactor Siting Criteria" (ANR) in the **Federal Register** (45 FR 50350). As part of this rulemaking, the NRC intends to prepare an Environmental Impact Statement (EIS). This notice of Intent requests comment on (1) the range of alternatives which should be evaluated for each of the items identified in the ANR as suitable to be addressed in the regulations, and (2) the issues which should be evaluated in the EIS.

DATE: Comment period expires January 16, 1981.

Note.—Comments received after the expiration date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments filed on or before that date.

ADDRESS: Written comments should be submitted to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docket and Service Branch.

Single copies of the "Advance Notice of Rulemaking: Revision of Reactor Siting Criteria" and the "Report of the Siting Policy Task Force," NUREG–0625, may be obtained without charge by writing to the Director, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

IAEA Safety Guide 50–SG–S4, "Site Selection and Evaluation for Nuclear Power Plants with Respect to Population Distribution." (International Atomic Energy Agency, Vienna, 1980) may be examined at the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C. or at local public document rooms in the vicinity of nuclear power plant sites or copies may be purchased from UNIPUB, 345 Park Avenue South, New York, NY 10010.

FOR FURTHER INFORMATION CONTACT: Contact Dr. William R. Ott, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, (301) 443–5988.

SUPPLEMENTARY INFORMATION: This Notice of Intent is part of the scoping process for the EIS which the NRC is planning to prepare in connection with the proposed revision of its regulations governing the siting of nuclear power plants. The purpose of this scoping process is to define both the alternatives (for specifying criteria for identified topics) which will be examined in detail and the issues tat will be addressed in comparing the alternatives in the environmental impact statement.

Scope of the Rulemaking and the Environmental Impact Statement

The items under consideration for rulemaking were identified in "Advance Notice of Rulemaking: Revision of Reactor Siting Criteria" (45 FR 50350) (ANR) and are listed in Table 1. This set of items together with the restrictions established in the ANR establishes the presently intended scope of the rulemaking. Additional items identified by commenters will be considered if the NRC staff judges that they are sufficiently important to the overall success of this rulemaking that they require immediate resolution. Specific alternatives for establishing criteria with respect to some of these items were listed in the ANR. In addition, for the purposes of the scoping process for the EIS, the NRC staff will consider alternatives for criteria that may be identified during the comment period on this Notice of Intent.

Although the NRC staff considered a wide range of information in arriving at the recommendations [1] which formed the main thrust of the ANR, additional technical studies will be required to fully document the impacts of the proposed criteria and reasonable alternatives to those criteria. The NRC staff has developed a tentative outline for the EIS to aid in identifying areas in which additional studies will be needed. Appendix A presents this tentative outline with notations after appropriate sections indicating whether the ANR or the NRC FY 1980 Authorization Act is the primary basis for the section. Appendix B presents a more detailed discussion of the technical approach for assessing issues that the NRC staff believes may be important in making informed choices among the alternatives.

[1] "Report of the Siting Policy Task Force," NUREG–0625, August 1979.

Table 1.—Items Under Consideration for Rulemaking

- Demographic criteria
  - Fixed exclusion distance
  - Fixed protective action distance
  - Population density
  - Population distribution
- Minimum standoff distance from external hazards
  - Airports
  - LNG and LPG terminals and pipelines
  - Large quantities of explosive or toxic materials
  - Major dams
  - Navigable waterways which are transportation routes for hazardous materials
  - Other nuclear power plants
- Interdiction of contaminated groundwater
- Consideration of post-licensing changes in off-site activities
- Prohibition of sites requiring unique or unusual design to compensate for site inadequacies
- Site approval at earliest decision point; criteria for reopening
- NRC review termination upon State agency disapproval

Relative to the issues identified in the appendices, comments will be most useful which:

1. Suggest other realistic alternatives to those presented in Appendix A, Chapter III (e.g., a specific approach or combination of approaches for establishing demographic criteria together with a technical justification of the approach).[2] Indicate why any identified alternatives are not worthy of further consideration.

2. Address the relevancy of the issues identified in Appendix B and the staff's planned approach to analysis of these issues.

3. Identify and justify any other issues which should be considered in this rulemaking.

Scoping Process for the EIS

The scoping process for the EIS will consist of publication of the ANR and

[2] To help the public provide informed comment on the range of alternatives for setting demographic criteria which may be appropriate for consideration in the EIS, copies of IAEA Safety Guide 50–SG–S4 "Site Selection and Evaluation for Nuclear Power Plants with Respect to Population Distribution" are available for examination at the Commission's Public Document Room at 1717 H Street NW., and at all local Public Document Rooms. This guide presents a survey of procedures used by regulatory authorities in IAEA member nations for considering population in reactor reviews. There is no special significance given to any of these approaches by the NRC staff but this summary does present most of the alternatives which may be reasonable to consider in establishing demographic criteria.

this Notice of Intent and consideration of the comments on each in preparation of the Scoping Summary Report. No public scoping meeting is planned; participation in the scoping process will be limited to written responses to this Notice of Intent. A special mailing of this Notice will be made to persons, organizations and agencies who have indicated an interest in this subject area. Federal agencies identified by the Council on Environmental Quality as having special expertise in this area will be included in this mailing. Other agencies which have jurisdiction by law or special expertise with respect to any environmental impact involved, or which are authorized to develop and enforce relevant standards are invited to participate in this scoping effort. Affected State and local agencies or any affected Indian tribes that wish to participate by commenting are invited to do so. At the conclusion of the comment period for this Notice of Intent, the NRC staff will assess the comments on both this Notice and the ANR; and will define the alternative criteria which will be considered in detail in the EIS. Since there will likely be considerable overlap and redundancy amongst various suggested alternative criteria, the staff will utilize its judgment and experience to establish a reasonable number of alternatives (which may differ from those tentatively listed in Appendix A) that have significant differences but have a good chance of equitably establishing appropriate siting restrictions for future nuclear power plants. The issues to be examined for each of the criteria will also be defined (see Appendix B).

The scoping process will be completed by the preparation and publication of a Scoping Summary Report. This report will include a final statement of the items that will be covered in this rulemaking, the reasons for deleting any of the items included in the ANR and a revised and more detailed outline for the EIS. A brief description of the reasons for including alternative criteria not presently identified, eliminating alternatives presently under consideration or combining similar alternatives will be presented. The report will also identify any issues with respect to these alternatives which have been included for detailed examination or have been dismissed from further consideration as peripheral, insignificant or adequately covered elsewhere. The report will also provide information on (1) the schedule for completion of the rulemaking, (2) related environmental studies, and (3) arrangements for others to prepare background information for the EIS. Copies of this report will be distributed to those who participated in the scoping process by commenting on the ANR or Notice of Intent.

Appendix A—Tentative Table of Contents for Siting EIS

I. Summary

I.1 Introduction.
I.2 Description of Proposed Action.
I.3 Description of Alternatives.
I.4 Summary of Major Issues (Including Unresolved Issues).
I.5 Identification of Preferred Alternatives.

II. Purpose and Need for the Action

II.1 Purpose of Promulgation of Reactor Siting Criteria.
II.2 Need for Reactor Siting Criteria; discussion of No Action Alternatives.

III. Identification of Alternatives

III.1 Introduction.
III.1.a. Discussion of AND and EIS Scoping Process as determinants of Scope of Rulemaking and Analyses of Alternatives.
III.1.b. Long Term Goals for Revision of Siting Criteria: Rationale for Selection of Criteria (ANR, Item A)
III.1.b1 Separation of siting from design (LWR specific?).
III.1.b.2 Desired degree of remoteness; regionalization.
III.1.b.3 Consideration of accidents beyond the design basis.
III.1.b.4 Attainable risk for nuclear compared to risks from other power generation sources (Individual vs. Societal Risk).
III.2 Demographic Criteria (ANR, Item B; NRC FY 80 Authorization Act).
III.2.a. Exclusion distance (ANR, Item B).
III.2.b. Specification of population density limit (ANR, Item B).
III.2.b.1 Siting Policy Task Force recommendation (ANR, Item B, Alternative A).
III.2.b.2 Three tier approach (ANR, Item B, Alternative B).
III.2.b.3 Single limit (ANR, Item B, Question 2).
III.2.b.4 Incorporation of meteorological and topographical constraints (ANR, Item B, ACRS comments).
III.2.c. Specification of population distribution limit (ANR, Item B).
III.2.c.1 Siting Policy Task Force recommendation (ANR, Item B, Alternative A).
III.2.c.2 Three tier approach (ANR, Item B, Alternative B).
III.2.c.3 Single value, uniform limit (ANR, Item B, Question 2).
III.2.c.4 Incorporation of meteoroligical and topographical constraints (ANR, Item B, ACRS comments).
III.3 Restrictions on Proximity to External Hazards (ANR, Item C).
III.3a. Practicality of proximity limitation (i.e. standoff distance) for each type of hazard (ANR, Item C, Alternative A).
III.3.b. Feasibility of design performance requirements (ANR, Item C, ACRS comments with regard to other nuclear plants).
III.3.c. Three tier approach (ANR, Item C, Alternative B).
III.3.d. Defer generic resolution; continue case-by-case determinations.
III.4 Capability to Interdict Contaminated Groundwater (ANR, Item D).
III.4.a. Unacceptable site characteristics plus performance requirements.
III.4.b. Performance requirements.
III.4.c. Case-by-case review for compliance with performance requirements.
III.5 Post-Licensing Changes in Offsite Activities (ANR, Item E).
III.5.a. Passive controls (ANR, Items F1, F2).
III.5.a.1 Private sector; notification requirements.
III.5.a.2 Local authorities; information requirements.
III.5.a.3 Other Federal agencies; notification requirements.
III.5.b. Generic responses restricting plant operation; criteria for action (ANR, Item F4, Questions 2 and 3).
III.5.c. Legislation to acquire direct control (ANR, Item F, Question 1).
III.6 No site characteristics requiring unique or unproven compensating design features. (Alternative is case-by-case design review.) (ANR, Item G).
III.7 Site approval at earliest decision point. (Alternative is no action.) (ANR, Item H).
III.8 Termination of Review Upon Disapproval by State Agency Whose Approval is Necessary (ANR, Item I).
III.8.a. Letter from governor (ANR, Item I, Question 2).
III.8.b. State designated overall approval authority (ANR, Item I, Question 2).
III.8.c. Any State Agency (ANR, Item I, Question 2).
III.8.d. No Response to State Agency Disapprovals (ANR, Item I, Question 2).

IV. Issues Important to the Specification of Reactor Siting Criteria

IV.1 Radiological Source Terms (Releases) and the Consequences of a Full Range of Accidents (ANR, Item B; NRC FY 80 Authorization Act).
IV. 2 Feasibility of Protective Actions (ANR, Item B, ACRS comments; NRC FY 80 Authorization Act).
IV.2.a. Population effects.
IV.2.b. Transportation constraints.
IV.2.c. External hazard initiators.
IV.3 Site Availability (NRC FY 80 Authorization Act).
IV.3.a. Population density and distribution criteria effects (Meterorology, topography, and regionalization) (ANR, Item B).
IV.3.b. Effects of Physiographic constraints (NRC FY 80 Authorization Act).
IV.3.c. Land use/external hazards considerations (ANR, Item C).
IV.3.d. Impacts of criteria with respect to alternative fuels (ANR, Item A).
IV.3.e. Groundwater interdiction requirements effects (ANR, Item D).
IV.3.f. Use of Existing sites or Federal lands (ANR, Item F).
IV.3.g. Effect of prohibition on sites requiring unusual or unproven design to compensate for site deficiencies (ANR, Item G).
IV.4 Socioeconomic Impacts.
IV.5 Severity of External Hazards (ANR, Item C).

IV.6 Effects of Post-Licensing Land Use Control (ANR, Item 5).
IV.7 Implications of Site Approval at Earliest Decision Point (ANR, Item H).
IV.8 Implications of Deferral to State Agency Disapprovals (ANR, Item I).

V. Comparison of Alternatives; Selection of Proposed Criteria

V.1 Introduction: Discussion of Comparative Analyses Consistent with Siting Goals.
V.1.a. Separation of siting from design.
V.1.b. Degree of remoteness; regionalization.
V.1.c. Accidents beyond the design basis.
V.1.d. Attainable risk with respect to other power generation sources.
V.2 Demographic Criteria.
V.2.a. Exclusion distance.
V.2.b. Population density limits.
V.2.c. Population distribution limits.
V.3 Proximity Restrictions for External Hazards.
V.4 Groundwater Interdictive Capability.
V.5 Post-Licensing Changes in Offsite Activities.
V.6 Unique or Unusual Design Prohibition.
V.7 Early Site Approval.
V.8 Deferral to State Agency Disapproval.

VI. List of Preparers

VII. Appendices

Appendix B.—Tehnical Approach to Detailed Analyses

I. *Issue:* Radiological consequences of accidents.

Proposed Analytical Approach: (EIS Section IV.1.)

Proposed criteria will be compared with realistic alternatives on the basis of impacts on public health and safety. For demographic criteria this means that variation in doses to the maximally exposed individual and the population from a full range of accident releases must be examined for alternative ways of specifying constraints on population density and distribution. The consequences will be evaluated with an updated version of the Reactor Safety Study Consequences Model (CRAC) computer code. Existing sites and a hypothetical site will be evaluated. Consequences considered will include early fatalities, injuries, latent fatalities, and property damage. Both individual and societal risk will be evaluated but may differ in relative importance for establishing different criteria. (Comment on the role of societal versus individual risk as determinants of exclusion distance and population density and distribution limits would be useful.)

II. *Issue:* Feasibility of Protective Actions.

Proposed Analytical Approach: (EIS Section IV.2.)

The topics under consideration for rulemaking with respect to demographic criteria and external hazards will be examined to determine whether the capability to take protective action in the vicinity of a site under accident conditions might be impaired or enhanced by various choices of alternative criteria.

III. *Issue:* Definition of region.

Proposed analytical Approach: (EIS Section IV.3.a.)

Alternative schemes of regionalization will be examined to determine a proper basis for establishing regional criteria. Socioeconomic and physiographic units will be examined to establish potential regional breakdowns. Effects of uniformity of population distribution, water resource restrictions and any other appropriate regional concerns will be considered when deciding on the proper regionalization scheme. (Comment would be useful with regard to appropriate determinants of region.)

IV. *Issue:* Site availability.

Proposed Analytical Approach: (EIS Sections IV.3.a and IV.3.b.)

Consistent with the intent of the NRC FY80 Authorization Act, the new demographic criteria should not preclude further siting of nuclear power plants in any region of the United States. An assessment will be made for each region that identifies the variation in availability of sites for nuclear power plants as a function of the structure of the criteria and the variation in numerical values as well as realistic constraints on siting such as water availability and violation of safety criteria. The benefits of regionally based criteria versus nationwide criteria will be examined. Basic information will be developed from existing siting studies which, taken together, cover large portions of the country.

[V) *Issue:* Socioeconomic Impacts.

Proposed Analytical Approach: (EIS Section IV.4.)

The socioeconomic impacts of varying degrees of remoteness will be investigated. Economic impacts of increased transmission distances, impacts on land use and other factors will be addressed along with sociological penalties and inequities in distribution of cost and benefits of such siting.

VI. *Issue:* Severity of External Hazards.

Proposed Analytical Approach: (EIS Sections IV.3.c and IV.5.)

A literature review will be performed to establish the potential level of hazard associated with the external hazards listed in the ANR and any other appropriate topics. Staff practice for dealing with these hazards will be assessed. Available models for characterizing the effect of a hazardous external event will be evaluated. The feasibility of establishing a meaningful protective distance will be examined. The availability of sites associated with the demographic criteria proposed by the staff will be reexamined to determine whether the standoff criteria will significantly alter site availability.

VII. *Issue:* Engineering Alternatives to Standoff Distances.

Proposed Analytical Approach: (EIS Sections III.3 and IV.5.)

The feasibility of design performance requirements as opposed to specific standoff distances will be evaluated.

VIII. *Issue:* Precluding Siting of Nuclear Reactors in any Region of the United States.

Proposed Analytical Approach: (EIS Section IV.3.d.)

Energy generation from any source has its associated risk and risks from some energy sources may be greater than that of the nuclear option. Therefore, it has been suggested that the siting criteria should not be so stringent as to preclude the use of nuclear power from any region of the United States. The implications of not precluding nuclear power from any region of the United States will be examined.

IX. *Issue:* Effect of Groundwater Interdiction Criteria on Site Availability.

Proposed Analytical Approach: (EIS Section IV.3.e.)

The effect on site availability of alternative siting criteria that assure the capability for groundwater interdiction would be examined.

X. *Issue:* Post-Licensing Land Use Control.

Proposed Analytical Approach: (EIS Section IV.6.)

The feasibility of passive and active controls on post-licensing land use in the vicinity of a nuclear plant would be explored. Alternative controls on population risk (given that criteria are exceeded) such as changes in operating procedures or authorized power level or additional risk reducing engineering systems would be addressed.

XI. *Issue:* Use of Existing Sites.

Proposed Analytical Approach: (EIS Section IV.3.f.)

The existing sites would be examined for various levels of criteria to determine which sites were acceptable under each proposal. The feasibility of adding additional units to each of these sites would then be examined and an estimate made by region of remaining siting capacity. Using the characteristics of the selected site, an estimate would be prepared of the availability of multi-unit sites as a modification of the availability information for the various demographic criteria and standoff distances.

XII. *Issue:* Use of Federal Lands.
Proposed Analytical Approach: (EIS Section IV.3.f.)

Federal land would be surveyed to establish suitability for location of single unit plants up through many-unit energy centers. The historical availability of Federal land would be explored for uses such as public power supply systems (Bonneville Power Authority, Tennessee Valley Authority, etc.), oil shale lease program, forestry timber management, water supply projects. The possible benefits would be examined regionally from well planned use of Federal lands to supplement areas already available to utilities and implement a multi-unit existing site approach. The degree of improvement in criteria that is possible if the availability associated with the recommended criteria is held constant after Federal lands are added would be assessed.

XIII. *Issue:* Use of Unusual or Unproven Engineering Design to Compensate for Site Deficiencies.
Proposed Analytical Approach: (EIS Section IV.3.q.)

An estimate would be made of the effect on site availability of instituting such a requirement, particularly where large areas might have a common deficiency which might preclude siting from a large region.

XIV. *Issue:* Termination of Review After State Disapproval.
Proposed Analytical Approach: (EIS Section IV.8.)

The implications of establishing automatic review termination with respect to various levels of State disapproval will be examined.

45 FR 81602
Published 12/11/80
Comments must be received by 2/9/81. Comments received after 2/1/81, will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments filed on or before 2/1/81.

10 CFR Part 50

Domestic Licensing of Production and Utilization Facilities; Design and Other Changes in Nuclear Power Plant Facilities After Issuance of Construction Permit

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: The U.S. Nuclear Regulatory Commission is considering amending its regulations to define more clearly the limitations on a construction permit holder to make changes in a facility during construction. This advance notice of proposed rulemaking is being published to invite comments, suggestions, or recommendations on the content of the proposed amendment. There will also be opportunity later for additional public comment on the proposed rule, if any, that may be developed by the Commission.

DATES: Comments must be received by February 9, 1981. Comments received after February 1, 1981, will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments filed on or before February 1, 1981.

ADDRESSES: Written comments, suggestions, or recommendations should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Services Branch. Copies of comments received may be examined at the NRC Public Document Room at 1717 H Street, N.W., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Warren Minners, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Phone: 301/492–7581.

SUPPLEMENTARY INFORMATION:

Background

The Atomic Energy Act of 1954, as amended, and the regulations of the Nuclear Regulatory Commission (NRC) provide a framework for issuance of construction permits (CPs) for nuclear power plants, but do not define precisely the commitment to which a permittee is legally bound when the NRC grants it a CP. As a result, there are conflicting opinions concerning the requirements associated with a CP, particularly with regard to whether a permittee is bound by representations made in its application, including the Preliminary Safety Analysis Report (PSAR), and on the hearing record. Because of this, for many years the NRC staff has been faced with the problem of not having clear guidelines for regulating changes in facility design, or in the permittee's procedures and staffing, between the time a CP is issued and a Final Safety Analysis Report (FSAR) is filed by the permittee as part of its Operating License (OL) application. Therefore, the staff's actions and practices (as well as those of holders of CPs) in this matter have developed on a case-by-case basis over the years.

The problem arises because the applicant is not required to supply initially all of the technical information required to complete the application and support the issuance of a CP which approves all proposed design features, so long as the Commission is able to make the requisite findings under Section 50.35(a) of 10 CFR Part 50.

As noted in a 1970 rule change with respect to Section 50.35 (35 FR 5317, "Backfitting of Production and Utilization Facilities; Construction Permits and Operating Licenses," March 31, 1970), one reason for not having defined precisely an applicant's CP commitments was an awareness that "the rapidly expanding technology in the field of atomic energy means that new or improved features or designs that may enhance the safety of production and utilization facilities are continually being developed." This echoed the Supreme Court's decision in *Power Reactor Development Co.* v. *Electrical Union*, 362 U.S. 396 (1961). Thus, the judgment was made that a permittee should only be bound by the "principal architectural and engineering criteria."

The present system provides no guidance regarding notification of design changes made after issuance of a CP or the type of staff response to be made. CP holders have informed NRC of design changes from the PSAR in various ways: transmittal of letters and PSAR amendments, submittal of informal drafts and oral communications, and delay of notification until submittal of the FSAR. The NRC staff's responses to notifications of such changes have most commonly been to defer detailed review until the OL application is reviewed. However, where the staff has considered a proposed design change significant and judged that the matter must be resolved before construction proceeds too far, it has undertaken detailed reviews. In some cases, safety evaluations or letters to CP holders have been written stating the staff's views about the proposed change.

The existing process has led to three major problems. First, there is no clear basis upon which the Office of Nuclear Reactor Regulation (NRR) can assess definitely whether changes in facility design, permittee procedures, or staffing after issuance of a CP require a formal CP amendment; second, there is no clear basis on which the Office of Inspection and Enforcement (IE) can enforce requirements in a CP; and third, the present process, since it provides no ground rules about the changes CP holders may make, on occasion prompts litigants (other than applicants) in CP hearings to litigate many details of the application in order to bind applicants.

An attempt to resolve some of these problems was made by the Atomic

Energy Commission in a rule proposed in 1969 (34 FR 8540, April 16, 1969) that would have added, among other things, a new section defining the "principal architectural and engineering criteria," departure from which would have required a CP amendment.

Most commenters on the proposed rule criticized the definition for being so broad and so all-inclusive as to lead to the conclusion that the proposed rule would make it mandatory that the design of the facility, as well as the quality assurance program, should be essentially complete and not subject to change at the CP stage, unless an applicant were willing to continually propose changes and amendments to its CP (thereby undergoing frequent and time-consuming scrutiny by the NRC staff).

In promulgating the final rule (35 FR 5317, March 31, 1970), the Atomic Energy Commission deleted the proposed definition saying that it required further study.

Since 1970, two staff studies were made in order to specify clearly what a holder of a CP could and could not change to provide a regulation that would be enforceable and to institute a new mode of doing business that would not cause a proliferation of CP amendments for minor changes. The results of the first study were reported in December 1975 and the results of the second in March 1977.[1] In both studies the staff tried to provide definitive guidance as to changes that would require a CP amendment by attempting to define the "principal architectural and engineering criteria" and establishing guidelines to determine when a proposed change would not fall within these criteria.

The first study proposed to make the "Design Features" section of the Technical Specifications a binding part of the CP, in the same way that the entire Technical Specifications are made part of an OL. In specifying the "Design Features," principal reliance would be placed on use of the Standard Review Plan, the General Design Criteria, Regulatory Guides, Branch Technical Positions, and industry criteria, codes, and standards to the extent necessary.

In the second study, the staff proposed that the term "principal architectural and engineering criteria" reference the General Design Criteria of Appendix A to 10 CFR Part 50 and have the same meaning as the term "principal design criteria" as used in § 50.34(a)(3)(i). The study proposed that the acceptance criteria provided in each of the Standard Review Plan sections constituted, in fact, the principal design criteria and should be used to develop a document consisting of a list of the "principal architectural and engineering criteria." The study also proposed fifteen other changes that would require a CP amendment. Of these, twelve items related to changes in the major features or components of a facility. Proposed guidance was provided to assist in determining when a proposed change would require a CP amendment.

Although both reports were subject to some peer review, no formal action was taken because of time pressures, difficulties of definition similar to those of the rule proposed in 1969, and the feeling that the present system was workable.

Commission Intentions

It is clear from a review of the present procedures, the 1969 rulemaking, and the two studies cited, that a rule should be considered that would improve the present licensing process and develop specific descriptions of the essential features of a facility (including the quality assurance program and other procedures and staffing requirements) to which the CP holder would be bound (whether under the rule, license conditions, or through a Licensing Board decision). The key problem, then, is to clarify and specify to what information the CP holder should be bound, at what point in the licensing process, under what circumstances, and through what means. There is also a need to control the way in which a CP holder implements NRC criteria.

The rulemaking proceeding will address the objectives of such a regulation, the alternative means of accomplishing the objective, and the advantages and disadvantages of each alternative. The areas to be addressed would include: (1) alternative descriptions of the essential features of the design, procedures, and staffing of a facility to which a CP holder would be bound, (2) specification of which changes would require no action, which would require notification, and which would require prior approval, and (3) the form of requirement, whether through rule, license condition, Licensing Board decision, or CP amendment.

The following five alternatives have been suggested:[2]

1. Maintain the status quo.

2. Drawing on § 50.55(e) of 10 CFR Part 50 (dealing with notifications of significant deficiencies having safety significance) and § 50.59 (dealing with changes to previously approved designs having safety significance), adopt a rule that establishes general criteria for determining circumstances requiring notification and CP amendment.

3. Adopt a rule defining "principal architectural and engineering criteria" (in effect reviving the 1969 rulemaking on this subject), using information learned to date.

4. Adopt a rule that all details of the application, including the PSAR, be made conditions of the CP and may not be changed without prior Commission approval.

5. Restructure the licensing process to require that sufficient plant design details and equipment performance specifications be provided in the PSAR so that the safety analysis can be essentially a final one. Upon review and approval, the important safety-related elements of the design would be made conditions of the CP and could not be changed without prior Commissioner approval. Staff review at the OL stage would then be primarily a matter of confirming that the "as built" plant conformed to the CP-stage safety analysis.

The Commission tentatively prefers implementation of Alternative 3 with a shift to Alternative 5 on June 1, 1983. Rules based on the concepts of alternatives 2, 3, or 4 could be imposed immediately. Alternatives 2 and 3 could provide some specified interval to allow the holders of construction permits to develop a list and description of the features or other changes subject to the rule. Alternatives 4 and 5 could be applied practicably only to new CPs.

Comments, suggestions, or recommendations on a proposed rule that would clarify the bounds on a construction permit holder during the course of construction are invited from all interested persons. Comments which discuss advantages or disadvantages, including cost or implementation schedules and the extent to which any such rule should be applied to existing construction permit holders, are particularly sought.

46 FR 11666
Published 2/10/81
Comments must be received on or before 3/23/81
Comment period extended to 4/22/81
Decommissioning Criteria for Nuclear Facilities; Notice of Availability of Draft Generic Environment Impact Statement

See Part 30 Proposed Rule Making

[1] These studies are described in Staff Paper SECY-80-90 (February 14, 1980) which is available for inspection in the Commission's Public Document Room.

[2] These alternatives are described more thoroughly in SECY-80-90 (February 14, 1980), which is available for inspection in the Commission's Public Document Room.

46 FR 46333
Published 9/18/81
Comments must be received on or before 11/17/81. Comments received after that date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before that date.
Safeguards Requirements for Nonpower Reactor Facilities Authorized to Possess Formula Quantities of Strategic Special Nuclear Material

See Part 73 Proposed Rule Making

46 FR 54378
Published 11/2/81
The comment period for the notice of proposed rulemaking is extended to 11/30/81. Comments on that notice received after this date will be considered if it is practical to do so; however, assurance of consideration cannot be given.

10 CFR Part 50

TMI-Related Requirements for Operating License Applications

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule; extension of comment period and supplemental information.

SUMMARY: The Nuclear Regulatory Commission has previously proposed a rule to add to its power reactor safety regulations a set of licensing requirements applicable to operating license applications. These requirements stemmed from the lessons learned from the accident at the Three Mile Island (TMI) nuclear power plant. This notice advises that the comment period for that proposed rule is extended and that a similar proposed rule applicable to operating reactors will not be forthcoming.

DATE: The comment period for the notice of proposed rulemaking is extended to November 30, 1981. Comments on that notice received after this date will be considered if it is practical to do so; however, assurance of consideration cannot be given.

ADDRESSES: Comments should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docket and Service Branch.

FOR FURTHER INFORMATION CONTACT: Mr. David M. Verrelli, Division of Licensing, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555; telephone (301) 492–8434.

SUPPLEMENTARY INFORMATION: On May 13, 1981, the Nuclear Regulatory Commission published in the **Federal Register** (46 FR 26491) a notice of proposed rulemaking. The comment period at that time was to expire 90 days later, on August 12, 1981. The Supplementary Information portion of that notice stated that the Commission intended to augment its regulations with a similar rule for operating reactors and that such a proposed rule would be published for comment within a matter of weeks.

The staff prepared a proposed rule that would codify those NUREG–0737 [1] items applicable to operating reactors. However, on August 6, 1981, the Commission decided against proceeding with an operating reactors rule at this time.

In view of this action, the Commission believes that licensees who had awaited publication of the proposed rule for operating reactors to finalize their comments on the proposed rule for operating license applications should be allowed a reasonable time to complete their comments. Therefore, the comment period for the proposed rule for operating license applications is hereby extended until November 30, 1981.

Dated at Bethesda, Maryland this 19th day of October 1981.

For the Nuclear Regulatory Commission.

William J. Dircks,

Executive Director for Operations.

47 FR 13369
Published 3/30/82
Comment period expires 6/1/82.
Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

10 CFR Part 50

Technical Specifications for Nuclear Power Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Commission is proposing to change its regulations pertaining to technical specifications for nuclear power reactors. The proposed changes would reduce the volume of technical specifications that are made part of an operating license, thereby reducing the number of change requests which licensees would have to submit to the NRC. The proposed changes, if adopted, are expected to produce an improvement in the safety of nuclear power plants through more efficient use of NRC and licensee resources.

DATE: Comment period expires June 1, 1982. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Interested persons are invited to submit written comments and suggestions to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: Mr. D. Skovholt, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555 (301/492–4446).

SUPPLEMENTARY INFORMATION: Each license for operation of a nuclear power reactor issued by NRC contains technical specifications which set forth the specific characteristics of the facility and the conditions for its operation that are required to provide adequate protection to the health and safety of the public. Technical specifications cannot be changed by licensees without prior NRC approval.

Background

Before 1968, § 50.36, "Technical Specifications," of the Commission's regulation 10 CFR Part 50, required technical specifications to include "those significant design features, operating procedures, and operating limitations which (were) considered important in providing reasonable assurance that the facility (would) be constructed and operated without undue hazard to public health and safety." Technical specifications that were formulated in accordance with this regulation, as it was then written, generally contained more detailed design information than was considered to be necessary to assure safe reactor operation. These technical specifications proved to be difficult to organize, unduly restricted flexibility of reactor operation, and necessitated the processing of many changes that were not significantly related to safety.

In December 1968 the Atomic Energy Commission (AEC), predecessor of the NRC, amended its regulations in §§ 50.36 and 50.59 (33 FR 18612). Section 50.36 was amended to include a more precise definition of those categories of technical specifications that must be included in an application for an operating license. The amended regulation narrowed the scope of the material contained in technical specifications by defining five specific categories of technical specifications. The five categories defined for nuclear reactors are: (1) Safety limits and limiting safety system settings, (2) limiting conditions for operation, (3) surveillance requirements, (4) design features, and (5) administrative controls. The design information that was required to be retained included only those items which, if altered, would have a significant effect on safety. Amendments to § 50.59, among other things, clarified requirements for keeping records of design changes and defined more adequately the term "unreviewed safety question." The latter change established criteria for allowing licensees to make certain kinds of changes, tests, and experiments (i.e., those not involving an unreviewed safety question or a change to technical specifications) without prior NRC approval. These amendments to §§ 50.36 and 50.59 (1) eliminated detailed design information from technical specifications, which in turn reduced the need for a large number of change requests, and (2) resulted in a system of technical specifications and regulations that more effectively directed the attention of both licensees' management and the NRC to matters important to safety.

As knowledge in the field of reactor safety increased, the level of complexity and detail in technical specifications also increased, and a divergence in content of technical specifications from one facility to another began to emerge. In addition, an increasing diversity of opinion between applicants and the NRC staff, as to what should be included as technical specifications, resulted in protracted discussions during the licensing process, and misapplication and misinterpretation of requirements by plant operating staffs after a license was issued.

In recognition of these difficulties, the AEC, in 1972, instituted the Standard Technical Specifications (STS) program. Sets of STS were developed for reactor types designed by each reactor manufacturer (for the latest revisions of these documents [1] see: NUREG–0452, Rev. 4, Fall 1981; NUREG–0123, Rev. 3, Fall 1980; NUREG–0212, Rev. 2, Fall 1980; and NUREG–0103, Rev. 4, Fall 1980 for Westinghouse, General Electric, Combustion Engineering, and Babcock and Wilcox, respectively). The STS provide applicants with model specifications to be used in formulating plant-specific technical specifications. They have served to make technical specifications for facilities licensed since 1974 more consistent with one another, and they have tended to reduce the number of disagreements between applicants and the NRC staff regarding items to be included as technical specifications.

Current Problem

Disagreements among parties to a recent NRC licensing proceeding (In the Matter of Portland General Electric Company, *et al.* (Trojan Nuclear Plant), ALAB–531, 9 NRC 263 (1979)), have highlighted the need to establish specific criteria in the regulations for deciding which items derived from the safety analysis report must be included in the technical specifications incorporated in the license for a facility.

In addition, the substantial growth in both the number of items and in the detail of the requirements contained in technical specifications that has taken place since the STS were instituted indicates that more precise definitions of the existing categories of technical specifications contained in § 50.36 are needed. The Commission is concerned that the increased volume of technical specifications lessens the likelihood that licensees will focus attention on matters of more immediate importance to safe operation of the facility.

While each of the requirements in today's technical specifications plays a role in protecting public health and safety, some requirements have greater immediate importance than others in that they relate more directly to facility operation. These are the requirements that pertain to items which the facility operator must be aware of and must control to operate the facility in a safe manner. To a large extent, the relative

[1] Copies may be obtained from the Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

importance of these requirements, as distinguished from those related to long-term effects or concerns, may have been diminished by the increase in the total volume of technical specification requirements.

Moreover, the increased volume and detail of technical specifications and the resultant increase in the number of proposed change requests that must be processed have increased the paperwork burden for both licensees and the NRC staff. This is because § 50.36 requires that technical specifications be included in each operating license; thus, any proposed change, regardless of its importance to safety, must be processed as a license amendment. For changes involving matters of lesser importance to safety, the processing of a license amendment with the associated increased paperwork has had no significant benefit with regard to protecting the public health and safety.

Proposed Solution

As a first step in attempting to resolve the difficulties associated with the current system of technical specifications for nuclear power reactors, the Commission published an Advance Notice of Proposed Rulemaking (ANPR) on July 8, 1980 (45 FR 45916), requesting comments on the desirability of changing its regulations on technical specifications to: (1) Establish a standard for deciding which items derived from the safety analysis report must be incorporated into the technical specifications for a facility; (2) modify the definitions of categories of technical specifications to focus more directly on the aspects of reactor operation that are important to the protection of the health and safety of the public; (3) define a new category of requirements that would be of lesser immediate importance to safety than technical specifications, thereby providing greater flexibility to both the NRC and licensees in processing proposed changes; and (4) establish appropriate conditions that must be met by licensees to make changes to the requirements in the new category without prior NRC approval.

Comments received in response to the ANPR were strongly in favor of a rule change to incorporate these concepts. Copies of the comments received from individuals, and a summary of all the comments received, are available for inspection and copying at the Commission's Public Document Room, 1717 H Street NW., Washington, DC 20555.

The NRC staff has considered these comments and has developed proposed changes to the regulations. The major features of these changes and the principles upon which they are based are discussed below.

I. General Principles

In reviewing the safety analysis report for a facility, the staff reviews the methods of analyses, the underlying assumptions, and the results and conclusions of the analyses to determine if the plant has been designed so as not to present undue risk to the health and safety of the public. Some of the analyses are quantitative in nature, while others are more qualitative, but all of the analyses rely on underlying assumptions. While many of these assumptions are explicit, such as those pertaining to plant operating mode, system lineups, or specific parameters, others are more implicit such as those associated with the degradation of equipment over the life of the plant or the management control over plant operation and maintenance. The fundamental purpose of technical specifications is to define and preserve those underlying assumptions that are expected to, or could, vary with time or circumstances, throughout the life of the plant, and thus to preserve the validity of the safety analysis. The specifications address a variety of underlying assumptions but are of six [1] general types:

1. Values of process variables that must be kept within certain bounds;
2. Operating state of equipment (e.g., valve position) that must be maintained;
3. Operating status (or operability) of equipment that must be maintained;
4. Condition (or quality) of equipment and structures that must be maintained;
5. Physical characteristics of the plant and site that must remain fixed; and
6. Administrative controls (e.g., shift staffing, review and audit) that must be maintained.

The first three types or specifications can be thought of as defining the "bounds" of normal plant operation within which the conclusions of the safety analysis report are expected to remain valid. These first three types relate directly to the operating mode of the plant and must be under the immediate cognizance and control of the operator to maintain safe plant operation.

The fourth type concerns the condition or quality of equipment or structures, and is expected to change slowly if at all, over an extended period of time. Thus, generally, specifications of this type are not of immediate concern to the day-to-day operation of the plant, but are of long-term importance to safety.

The fifth type defines the physical characteristics of the plant and site that are not expected to change at all unless the licensee decides to alter the plant design in some way. Thus, they are not of concern to the day-to-day plant operation, but are of long-term importance to safety.

The sixth type, administrative controls, can be divided into two subtypes: one pertaining to shift staffing and responsibilities, the other pertaining to management overview and control of plant changes and operations. The former is more important to the immediate operation of the plant, while the latter is more important over the long term.

Plant functions also can be segregated in a similar way. Those that are considered of immediate importance to safety are those associated with:

1. Protecting the integrity of fission product barriers;
2. Controlling reactivity;
3. Cooling the fuel; and
4. Limiting the release of radioactive fission products following an accident.

These functions must be under the constant cognizance and control of the plant operator to assure safe plant operation. Other functions, such as those associated with the mitigation of the effects of natural or man-made phenomena (fires, floods, earthquakes, etc.), serve to support these four functions, but are not subject to the level of operator control associated with the four function listed above.

In the Commission's view, any system of specification should (as the existing system does) properly account for all of the types of requirements discussed above, but should be organized in a manner that recognizes the different levels of importance associated with the various plant functions.

II. Overview of Proposed New System of Specifications

The proposed changes to 10 CFR Part 50 would establish a new system of specifications divided into two general categories. The categories, which are discussed in further detail in succeeding sections, are:

1. Technical Specifications, and
2. Supplemental Specifications.

Proposed specification in both categories would be included in an application for a license (in Chapter 16 of the FSAR), and would be reviewed and approved by the staff, but only those in the category of technical specifications would be made directly part of the operating license. As in the past, prior NRC approval is required for any change to technical specifications.

Specification in the supplemental category would be documented in the FSAR and linked to the licensing

[1] The first five types are essentially those cited in ANSI/ANS-58.4-1979, "Criteria for Technical Specifications for Nuclear Power Stations."

document through a new license condition in § 50.54. The licensee would be allowed to make changes to the supplemental specifications within certain bounds and under prescribed conditions, without obtaining prior NRC approval. As further discussed in section III.B below, these changes would be required to be reported along with a safety evaluation for each. The NRC would review these changes and supporting documentation in the same manner as design changes, tests, and experiments are currently reviewed under 10 CFR 50.59. Any change made by a licensee that was not adequately justified could be quickly revoked upon written notification by the appropriate NRC Regional Administrator. A change to § 50.54 would be made to require that supplemental specifications documented in the FSAR must be adhered to by the licensee. Under this system, the licensee has some latitude to change the supplemental specifications, which have a lesser degree of safety significance than technical specifications. Prior NRC approval will not be necessary, and the reduced workload for the licensee and the staff will permit greater concentration on more significant matters.

This new system of specifications would be put in effect for new operating licenses issued 180 days after the effective date of the amended rule. There would be no backfit requirement for existing operating facilities, though this could be done if a licensee were to request it.

III. Major Features of Proposed Rule

A. Changes to Definitions of Technical Specification Categories

1. The term technical specifications would become a category of specifications and would consist of operational specifications and principal design feature specifications.

a. *Operational Specifications.* Operational specifications would be defined (see proposed § 50.36(d)(1)) as those specification imposed upon facilitiy operation that are necessary to assure that the facility is operated within limits and under conditions that are consistent with the assumptions in the safety analysis report regarding the value of process variables and the operating state and standby status of systems and components associated with the four safety functions identified in Section I above. This definition would establish a framework for deciding which items derived from the safety analysis report are to be included in the operational specifications. Operational specifications must be written for all normal modes of facility operation including shutdown and refueling. They would be part of the operating license and would consist of five subcategories, each of which is discussed separately below.

(i) *Safety limits*—Safety limits would be defined (see propsoed § 50.36(d)(1)(i)); the same way they are currently defined in the present system of technical specifications (in § 50.36(c)(1)); i.e., they would be limits on important process variables needed to protect the integrity of fission product barriers. If a safety limit is exceeded, the licensee must: shut down the plant; notify NRC; review the matter to determine appropriate actions to preclude recurrence; and restart the plant only after authorization is received from NRC.

(ii) *Limiting safety system settings (LSSS).* LSSS would also be defined (see propcsed § 50.36(d)(1)(ii)) the same way they are currently defined in § 50.36(c)(1), that is, as settings for automatic protective devices associated with variables having signifiant safety functions. These settings are to be chosen so that the automatic protective devices action will correct an abnormal situation before a safety limit is exceeded, thus preserving an essential safety function.

If an automatic protective device does not function properly, the licensee must: take appropriate action, which may include plant shutdown; notify NRC; and review the matter to determine appropriate actions to preclude recurrence.

(iii) *Operational limits and conditions (OLC).* OLCs would be a newly defined subcategory, similar to the existing "limiting conditions for operation" (LCOs) defined in § 50.36(c)(2), with some important differences. OLCs would be defined (see proposed § 50.36(d)(1)(iii)) as limits on important process variables and on conditions relating to the operating state and standby status of systems and components. These limits and conditions are associated with the performance of the functions of controlling reactivity, cooling the fuel, and limiting the release of radioactive fission products following an accident. The OLC subcategory is narrower in scope than the existing LCO definition, since LCOs include items addressing virtually any equipment in the plant "required for safe operation of the facility."

When an OLC is not met, the licensee must: Shut down the plant or take specified remedial action to place the facility in a safe condition until the OLC can be met; notify NRC; and review the matter to determine appropriate actions to preclude recurrence. The present LCO definition includes plant shutdown as a required action, but it also allows (for matters of lesser importance) "any remedial action permitted by the technical specifications until the condition can be met." For LCOs in the current system that have a lower level of importance to safety (i.e., are not essential to the functions listed above), "remedial action" has often been only a reporting requirement. With the proposed system, only technical specifications with immediate importance to safety would be included as OLCs; thus, specific action to change the facility operating mode will be required when an OLC is not met.

(iv) *Check and test requirements (CTR).* Check and test requirements would be a newly defined subcategory similar to the existing surveillance requirements defined in § 50.36(c)(3), but would not include requirements relating to " * * * calibration or inspection to assure the necessary quality of systems and components is maintained * * *" These calibration or inspection requirements would be included in the definition of facility monitoring provisions which are discussed below under supplemental specifications. Check and test requirements would be defined (see proposed § 50.36(d)(1)(iv) as those periodic checks and tests needed to assure that operation will be within the safety limits and that the LSS and OLCs are met. These are the checks and tests that are generally performed by plant operators during, or just prior to, operation to determine if process variable are within acceptable bounds, and if systems and equipment are in the correct operating state or standby status. As with the current LCOs and surveillance requirements, the technical specifications would be structured to attain a one-to-one correspondence between these checks and tests and each OLC, to assure that operators keep abreast of plant status with respect to each OLC.

(v) *Operational staffing and reporting requirements (OSR).* OSR would be a newly defined subcategory which would contain a subset of the requirments currently contained in Administrative Controls as defined in § 50. 36(c)(5). OSR would be defined (see proposed §50.36(d)(1)(v)) as those items relating to shift crew composition and responsibility, as well as reporting, that are necessary to assure operation in a safe manner. These items are considered to be of immediate short-term importance to safety and thus are included in operational technical specifications and would be part of the operating license.

b. *Principal Design Feature Specifications.* Principal design feature specifications would consist of those items that are currently categorized as "design features" in the present system of technical specifications, as defined in the existing § 50.36(c)(4). They would be defined (see proposed § 50.36(d)(2)) in

essentially the same way; that is, those physical characteristics of the facility which, if altered, woud have a significant effect on safety and are not included in other categories of technical specifications. Principal design feature specifications identify the physical characteristics of the plant and site that may not be changed without prior NRC approval. These specifications are not considered of immediate importance to safety and therefore are not included in the Appendix A operational technical specifications; however, because of their great importance to assurance of the validity of the accident analysis, they will be made part of the facility operating license.

2. *Supplemental Specifications.* Supplemental specifications would consist of those items needed to preserve safety analysis assumptions regarding important safety functions not included in operational technical specifications, assure that the necessary quality of systems, components, and structures is maintained, and assure effective management overview and control of facility changes and operations.

Supplemental specifications would not be made directly part of the operating license, but would be indirectly linked to the licensing document and be enforceable by regulations prescribed in § 50.54 (see proposed § 50.54(x)). Enforceability is separately discussed in subsection C below. The licensee would be allowed to make changes to supplemental specifications, within certain bounds and under prescribed conditions, without prior NRC approval. These bounds and conditions are discussed in subsection B below. Supplemental specifications would consist of three subcategories, each of which is discussed separately below:

a. *Control provisions.* Control provisions would be defined (see proposed § 50.36(e)(1)) as provisions relating to the control of variables and the operating state and standby status of systems and components associated with important safety functions not included in operational technical specifications. Examples of these functions are the mitigation of the effects of natural or man-made phenomena (fires, floods, earthquakes, etc.). This subcategory would include those specifications that are designated as LCOs in the current system but that are not essential to the four safety functions discussed earlier. The control provisions would include requirements for periodic checks and tests to assure the provisions are being met.

When a control provision is not met, the licensee must: take appropriate action, which generally would be administrative in nature, such as reporting to NRC, instituting fire patrols, etc., and review the matter to preclude recurrence. Plant shutdown would not be required because items in this subcategory are not considered to be of immediate importance to safety. However, documentation of licensee review of these matters would be required to be made available on a regular basis for NRC audit.

b. *Monitoring provisions.* Monitoring provisions would be defined (see proposed § 50.36(e)(2)) as provisions relating to monitoring, inspection, testing, and calibration needed to provide long-term assurance that the necessary quality of systems, components, and structures important to safety is maintained. The monitoring provisions would assure that the FSAR assumptions regarding the condition of equipment and structures would remain valid over the life of the plant. The monitoring provisions would contain those surveillance requirements that are performed at relatively long intervals and are directed toward determining the state of quality or condition of equipment. A large portion of these inspections, etc., are generally performed by technicians rather than by plant operators while the plant is in a shutdown or refueling mode.

When the performance of inspections or tests required by a monitoring provision reveals a defect, the licensee would be required to declare the system, component, or structure to be inoperable and take the action appropriate for that system, component, or structure as stipulated in the specification. This is no different from what would be required by the current system of technical specifications if the performance of a surveillance requirement revealed a defect.

c. *Administrative provisions.* Administrative provisions would be defined (see proposed § 50.36(e)(3)) as provisions relating to organization, recordkeeping, review and audit, and reporting necessary to assure effective management overview and control of facility changes and operations. The administrative provisions would contain those items in the current system designated as administrative controls, as defined in § 50.36(c)(5), that are not included in the operational technical specifications as operational staffing and reporting requirements. These items are important in the long term to effective management overview and control, but are not considered to be of immediate importance to the safe operation of the plant.

Administrative specifications are essential to the entire control scheme of changes to technical specifications, because they govern how other specifications can be changed. For instance, administrative specifications, rather than 10 CFR 50.59, specify that proposed changes to specifications have to be assessed carefully. Therefore, administrative specifications become especially important if, as intended, the proposed rule shifts more control from NRC to licensees, allowing them to make changes before NRC review. The NRC intends to carefully monitor changes to administrative specifications to ensure that essential administrative controls are rigorously maintained.

B. Changes to Supplemental Specifications

The licensee would be permitted to make changes to supplemental specifications (see proposed § 50.36(f)(1)) without prior NRC approval, provided the changes do not involve a conflict with the technical specifications incorporated in the license or do not result in a decrease in their effectiveness as explicitly defined for each type of provision (see proposed § 50.36(f) (2), (3), and (4)). The rule contains tests to be applied for each type of supplemental specification. These tests are considered by the Commission to be appropriate to judge whether there is a decrease in the effectiveness of a revised specification. The licensee may change a supplemental specification only after it determines that these tests are met.

The licensee would be required to review proposed changes to supplemental specifications in the same manner as is currently required for proposed design changes by 10 CFR 50.59. And, as with § 50.59 design changes, the revised § 50.36 would require (see proposed § 50.36(f)(5)) the licensee to maintain records of changes made to the supplemental specifications which would be available for NRC audit, including a written safety evaluation which provides the basis for determining that the change does not involve a decrease in effectiveness of the provision, and to report all these changes to NRC. This would be done on a prompt basis. NRC review of these changes would be conducted in a manner similar to that of reviews of 10 CFR 50.59 changes; i.e., NRC will, by audit, ascertain that the licensee has exercised responsible and prudent judgment and that safety evaluations made by the licensee are consistent with practices used by NRC in approving issuance of a license.

In addition to the staff review of reports to assess licensee performance, the monitoring of plant operations by the NRC resident inspector will include consideration of changes to supplemental specifications. Since the licensee is required to document its

basis for the change to the supplemental specification prior to effecting it, the documentation is available for the resident inspector's review whenever desired.

Changes to supplemental specifications that involve a conflict with the technical specifications incorporated in the license or a decrease in their effectiveness would require NRC approval prior to their implementation (see proposed § 50.36(f)(6)).

C. Enforceability of Specifications

Under the existing system of technical specifications prescribed by § 50.36, the enforceability of specifications is assured by making them a part of the license. Under the proposed system prescribed by the proposed changes to 10 CFR Part 50, only technical specifications, as more narrowly defined, would be incorporated directly into the licensing document. Supplemental specifications would not be part of the four corners of the license as such. However, in order to link the license to the supplemental specifications, § 50.54, "Conditions of Licenses," would be modified (see proposed § 50.54(x)) to require licensees to abide by all specifications, including the supplemental specifications documented in the FSAR, as amended by changes made, and recorded and reported in accordance with the proposed § 50.36(f)(5). In addition, a provision would be added to give authority to the appropriate NRC Regional Administrator to immediately revoke any change made by a licensee to supplemental specifications that is judged not to have adequate justification. This delegation of licensing authority to the Regional Administrator will be exercised in accordance with policies and guidance developed by the Office of Nuclear Reactor Regulation. The licensee could provide additional information if it desires to further justify a change but would be required to obtain NRC approval before reinstituting the change. Additionally, changes to supplemental specifications will be subject to possible enforcement action in accordance with NRC Enforcement Policy. Changes which are inadequately reviewed, supported or justified or incorrectly implemented may result in a violation. These violations will be evaluated in the same way violations of 10 CFR 50.59 are evaluated in accordance with NRC Enforcement Policy.

D. Applicability of Proposed Rule

The proposed rule, if adopted, would apply to nuclear plants receiving an operating license on or after a date 180 days after the effective date of the final rule (see the proposed § 50.36 (b), (d), and (g)). Technical specifications issued before that date would not be required to be changed; however, upon request by a licensee to convert the existing technical specifications to the new scope, content and format, the NRC would take action to grant the request.

IV. Paperwork Reduction Act Statement

As required by Pub. L. 96–511, this proposed rule will be submitted to the Office of Management and Budget for clearance of the reporting and recordkeeping requirements.

V. Regulatory Flexibility Act Statement

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 604(b), the Commission hereby certifies that this rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. This proposed rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 21. Since these companies are dominant in their service areas, this proposed rule does not fall within the purview of the Act.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of Title 5 of the United States Code, notice is hereby given that adoption of the following amendments to 10 CFR Part 50 is contemplated.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for this part reads as follows:

Authority: Secs. 103, 104, 161, 182, 183, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2239); secs. 201, 202, 206, 88 Stat. 1243, 1244, 1246 (42 U.S.C. 5841, 5842, 5846), unless otherwise noted. Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80–50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Sections 50.100–50.102 issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10 (a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10 (b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. In § 50.36, the title is revised, paragraphs (a) and (b) are revised, the introductory text of paragraph (c) is revised, paragraph (d) is revised and redesignated paragraph (g), and new paragraphs (d), (e), and (f) are added to read as follows:

§ 50.36 Specifications.

(a) Each applicant for a license authorizing operation of a production or utilization facility shall include in its application proposed technical specifications in accordance with the requirements of this section. The technical specifications must be derived from the analyses and evaluation included in the safety analysis report, and amendments thereto, submitted under § 50.34. These specifications are described in paragraphs (c), (d), and (e) of this section. A summary statement of the bases or reasons for the specifications, other than those covering administrative controls or provisions, or operational staffing and reporting requirements, must also be included in the application, but will not become part of the technical specifications.

(b) Each license authorizing operation of a production or utilization facility of a type described in §§ 50.21 or 50.22 of this part will include technical specifications. For a nuclear reactor operating license issued before (180 days after the effective date of this amendment) and for a fuel reprocessing plant, the license will include technical specifications in the categories set forth in paragraph (c) of this section. For a nuclear reactor operating license issued on or after (180 days after the effective date of this amendment) the license will include technical specifications in the categories set forth in paragraphs (d (1) and (2) of this section. The Commission may include additional technical specifications as it finds appropriate.

(c) Technical specifications for a nuclear reactor operating license issued before (180 days after the effective date of this amendment) and for a fuel reprocessing plant will include items in the following categories:

* * * * *

(d) Technical specifications for a nuclear reactor operating license issued on or after (180 days after the effective date of this amendment) will include items in the following categories:

(1) *Operational specifications.* Operational specifications are specifications imposed upon facility operation that are necessary to assure that the facility is operated within limits and under conditions that are consistent with the assumptions in the safety analysis report regarding the values of process variables and the operating state and standby status of systems and components that are associated with the performance of the functions of controlling reactivity, cooling the fuel, protecting the integrity of fission product barriers, and limiting the release of

radioactive fission products following an accident. Operational specifications are to be imposed on all normal modes of facility operation including shutdown and refueling and are to consist of items of the following types:

(i) *Safety limits.* Safety limits are limits upon important process variables which are found to be necessary to reasonably protect the integrity of certain of the physical barriers which guard against the uncontrolled release of radioactivity. If any safety limit is exceeded, the reactor must be shut down. The licensee shall notify the Commission, review the matter, and record the results of the review, including the cause of the condition and the basis for corrective action taken to preclude recurrence. Operation may not be resumed until authorized by the Commission.

(ii) *Limiting safety system settings.* Limiting safety system settings are settings for automatic protective devices related to those variables having significant safety functions. Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting must be chosen so that automatic protective action will correct the abnormal situation before a safety limit is exceeded. If, during operation, the automatic safety system does not function as required, the licensee shall take action as stipulated in the specification, which may include shutting down the reactor; notify the Commission; review the matter; and record the results of the review, including the cause of the condition and basis for corrective action taken to preclude recurrence.

(iii) *Operational limits and conditions.* Operational limits and conditions are limits on important process variables and conditions relating to the operating state and standby status of systems and components that are associated with the performance of the functions of controlling reactivity, cooling the fuel, protecting the integrity of fission product barriers, and limiting the release of radioactive fission products following an accident. When an operational limit or condition of a nuclear reactor is not met, the licensee shall shut down the reactor or follow specified remedial action, as stipulated by the specifications, to place the facility in a safe condition until the operational limit or condition can be met. The licensee shall notify the Commission, review the matter, and record the results of the review including the cause of the condition and the basis for corrective action taken to preclude recurrence.

(iv) *Check and test requirements.* Check and test requirements are requirements relating to periodic checks and tests to assure that facility operation will be within the safety limits and that the limiting safety systems settings and operational limits and conditions are met.

(v) *Operational staffing and reporting requirements.* Operational staffing and reporting requirements are requirements relating to shift crew composition and responsibility and reporting that are necessary to assure operation in a safe manner.

(2) *Principal design feature specifications.* Principal design feature specifications are specifications relating to those features of the facility, such as materials of construction and geometric arrangements, which, if altered or modified, would have a significant effect on safety and are not covered by technical specifications required by paragraph (d)(1) of this section.

(e) *Supplemental specifications.* For nuclear reactors licensed to operate in accordance with technical specifications of the type described in paragraph (d) of this section, the final safety analysis report must also include supplemental specifications. Supplemental specifications are specifications relating to monitoring, control, and administration necessary to assure that the quality of equipment, the proper operating state and standby status of important support systems, and effective management overview and control of facility changes and operations are maintained. Supplemental specifications are to consist of items of the following types:

(1) *Control Provisions.* Control provisions are provisions relating to the control of variables and the operating state and standby status of systems and components associated with important safety functions not described in paragraph (d)(1) of this section, such as the mitigation of the effects of natural or man-made phenomena. Each control provision must include periodic checks or tests to assure that the provision is being met. When a control provision is not met, the licensee shall take appropriate action as permitted by the specification. The licensee shall review the matter and record the results of the review, including the cause of the condition and basis for corrective action taken to preclude recurrence.

(2) *Monitoring Provisions.* Monitoring provisions are provisions relating to monitoring, inspection, testing, and calibration needed to provide long-term assurance that the necessary quality of systems, components, and structures important to safety is maintained. When the results of a monitoring provision activity indicate that the necessary quality is lacking, the licensee shall declare the system, component, or structure to be inoperable and take appropriate action as permitted by the specifications.

(3) *Administrative Provisions.* Administrative provisions are provisions relating to organization, qualifications of personnel, procedures, recordkeeping, review and audit, and reporting necessary to assure effective management overview and control of facility changes and operations.

(f) *Changes to supplemental specifications.* (1) A licensee may make changes to supplemental specifications without prior Commission approval, unless the change involves: (i) A conflict with the technical specifications incorporated in the license; or (ii) a decrease in the effectiveness of the provisions of the supplemental specification.

(2) A change to a control provision is deemed to involve a decrease in the effectiveness of the provision: (i) If the controls on variables or on performance levels that define the required operating state or standby status of system and components are relaxed; or (ii) if the frequency of the periodic check or test is decreased more than is justified by the history of test results; or (iii) if the required action, in the event the provision is not met, is relaxed.

(3) A change to a monitoring provision is deemed to involve a decrease in the effectiveness of the provision: (i) If the frequency of the monitoring, inspection, testing, or calibration is decreased without a compensating change in the acceptance criterion or an increase in the sensitivity or accuracy of the method used, unless the cumulative history of test results clearly supports a reduction in frequency; or (ii) if the sensitivity or accuracy of the method used to perform the monitoring, inspection, testing, or calibration is decreased without a compensating change in the acceptance criterion or increase in the frequency of the monitoring, inspection, testing, or calibration; or (iii) if the acceptance criterion for the monitoring, inspection, testing, or calibration is relaxed without a compensating increase in the frequency, sensitivity, or accuracy of the method used.

(4) A change to an administrative provision is deemed to involve a decrease in the effectiveness of the provision: (i) If the level of management overview or control is decreased; or (ii) if the assurance of the quality of operations or of personnel is decreased;

(iii) if the usefulness of the recordkeeping in assessing matters important to safety is decreased; or (iv) if the method or timeliness of management review of changes to specifications is changed.

(5) The licensee shall maintain records of changes in the supplemental specifications made under this section. These records must include a written safety evaluation which provides the basis for the determination that the change does not involve a decrease in the effectiveness of the provisions. The records must also include an indication of review and approval by the licensee's onsite safety review organization. These records must be available for inspection at the facility before implementation of the change. Within three days of approval of a change to a supplemental specification, the licensee shall furnish to the appropriate NRC Regional Administrator shown in Appendix D of Part 20 of this chapter (with a copy to the Director of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555) a report containing a brief description of each change, including a copy of the safety evaluation. Any report submitted by a licensee under this paragraph will be made part of the public record. The records of changes made to the supplemental specifications must be maintained for a period of at least 5 years.

(6) A licensee who wants a change to the supplemental specifications that involves (i) a conflict with the technical specifications incorporated in the license; or (ii) a decrease in the effectiveness of the provisions of the specification, shall submit a proposed change, along with the basis and justification for the proposed change, for approval by the Commission prior to implementing the proposed change.

(7) A proposed change to the supplemental specifications that involves (i) a conflict with the technical specifications incorporated in the license, or (ii) a decrease in the effectiveness of the provisions of the specification, or (iii) an unreviewed safety question, shall be treated as a proposed change in the facility or procedures, as described in the safety analysis report, requiring an amendment to the license. A licensee who desires such a change shall submit an application for amendment to its license pursuant to § 50.90.

(g)(1) This section does not modify the technical specifications included in any license issued before (180 days after the effective date of this amendment). A license which does not contain technical specifications is deemed to include the entire safety analysis report as technical specifications.

(2) At the initiative of the Commission or the licensee, any license may be amended to include technical specifications of the scope and content which would be required if a new license were being issued.

3. In § 50.54, a new paragraph (x) is added to read as follows:

§ 50.54 Conditions of licenses.

* * * * *

(x) The licensee shall maintain and operate the facility in accordance with the specifications provided in § 50.36 of this part. Changes to the specifications may be made only with prior Commission approval or as prescribed in § 50.36(f) of this part. A change made by the licensee under § 50.36(f) of this part must be revoked immediately upon written notification by the appropriate NRC Regional Administrator that the justification provided for the change is inadequate. When this notification is received by the licensee, the change must not be implemented, or must be revoked if already implemented, and may not be reinstated without prior Commission approval.

Dated at Washington, D.C., this 24th day of March, 1982.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

47 FR 27371
Published 6/24/82

Comment period expires 9/22/82. Comments received after the expiration date will be considered if it is practical to do so but assurance of consideration cannot be given except as to comments filed on or before that date.

10 CFR Part 50

Mandatory Property Insurance for Decontamination of Nuclear Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: On March 31, 1982 the Nuclear Regulatory Commission (NRC) published in the **Federal Register** (47 FR 13750) an interim final rule requiring utility licensees to purchase on-site property insurance to be used for decontamination expenses arising from an accident. The NRC subsequently published a report on property insurance prepared by Dr. John D. Long, Professor of Insurance at Indiana University (NUREG–0891). This advance notice of proposed rulemaking requests comments on that report and other questions relating to property insurance for nuclear utilities.

DATES: Comment period expires September 22, 1982. Comments received after the expiration date will be considered if it is practical to do so but assurance of consideration cannot be given except as to comments filed on or before that date.

ADDRESSES: Written comments should be submitted to the Office of the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Copies of the comments may be examined at the NRC Public Document Room, 1717 H Street, NW., Washington, DC 20555.

Copies of the report entitled "Nuclear Property Insurance: Status and Outlook," NUREG–0891, may be obtained under the NRC/GPO Sales Program at a cost of $6.00 by writing to the Director, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555. This report is also available for inspection and copying at the NRC Public Document Room, 1717 H Street, NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Mr. Robert S. Wood, Office of State Programs, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492–9885.

SUPPLEMENTARY INFORMATION: Recently, the NRC published a report, "Nuclear Property Insurance: Status and Outlook" (NUREG–0891), by Dr. John D. Long, Chairperson and Professor of Insurance at Indiana University. This report was written as an outgrowth of the Three Mile Island–2 accident after it became apparent that nuclear utilities may need more property insurance than has been available. The NRC staff asked Dr. Long to write the report, in part, to answer six questions as follows:

1. What has been the development of each principal source of nuclear property insurance used as of early 1982 by nuclear utilities in the United States?

2. What are some of the distinguishing features of nuclear property insurance as offered by the principal sources?

3. How much nuclear property insurance was offered by each of these sources as of January 1, 1982?

4. Assuming that present plans come to fruition, how much nuclear property insurance is likely to be offered by each of these sources as of January 1, 1983.

5. What, if any, principal sources of nuclear property insurance are likely to emerge in the private sector by January 1, 1983?

6. What problems serious enough to warrant action of the U.S. Nuclear

Regulatory Commission exist with respect to nuclear property insurance and what action should NRC take in response to each problem?

While this report was being prepared, the NRC issued an interim final regulation which, for the first time, requires utility licensees to purchase on-site property damage insurance to be used for decontamination expenses and other expenses arising from an accident. The new regulation, 10 CFR 50.54(w), was published in the **Federal Register** on March 31, 1982 (47 FR 13750) and requires electric utility licensees to carry both the maximum amount of property insurance offered as primary coverage by either American Nuclear Insurers/Mutual Atomic Energy Reinsurance Pool (ANI/MAERP) or Nuclear Mutual Limited (NML) plus any excess coverage in an amount no less than that offered by either ANI/MAERP or Nuclear Electric Insurance Limited (NEIL). Insurance will be required to be carried as of June 30, 1982. Electric utility licensees will be required on April 1, 1983 and annually thereafter to report on their coverage.

Because of matters raised in the report that were not addressed in the final rule and because the NRC desires the widest possible public input on the issues raised in NUREG–0891, we encourage interested parties to respond to the following questions. We also welcome comments on any other issues relating to property insurance for nuclear utilities, whether or not they have been raised in NUREG–0891. The comments will be considered by the Commission as it develops a proposed rule.

The NRC is particularly interested in receiving comments on the following questions:

1. What dollar limits of property insurance coverage should the NRC require? Professor Long recommended that the NRC require its commercial reactor licensees to carry whatever primary on-site coverage is offered both by ANI/MAERP and by NML plus whatever excess coverage is offered in the markets. Currently, if the capacities offered by these sources were simply added together, they would exceed $1.2 billion. Another possibility would be to require primary coverage either from ANI/MAERP or NML plus the total of whatever excess coverage is offered in the markets. At the present time, such a proposal would result in coverage of about $860 million, an amount between Dr. Long's recommendation and the current NRC property insurance requirement.

Alternatively, the NRC could retain its current property insurance requirements, and in addition, could publish annually the amount of coverage carried by each commercial reactor licensee. (The present regulation requires each licensee to report its insurance coverage to NRC annually (10 CFR 50.54(w)(4)). This information could then serve as a focus for decision-making by State regulatory bodies and other interests on the management judgment exercised by each utility regarding the purchase of nuclear property insurance coverage. Thus, after meeting a given minimum property insurance requirement of the NRC (i.e. the current requirement of the regulations), the decision to purchase any further property insurance could be resolved through the market mechanism by the licensee, its insurers, its customers, public utility commissions, equity and debt holders, and other interested parties. This approach raises the question of whether the NRC should increase the frequency of its reporting requirements relating to property insurance coverage. Comments are invited on how well these proposed mechanisms, or alternatives to them, will result in arriving at the proper level of coverage.

Finally, should the amount of insurance required be based on TMI-type accident recovery cost estimates or on some other technical basis?

2. If the NRC changes its requirements for property insurance, should there be special provisions for certain types of licensees? For example, should all power reactors regardless of authorized power level be required to purchase the same amount of insurance? Should the NRC exempt from applicable portions of property insurance requirements those utilities prohibited by state law from obtaining coverage from certain types of insurers? Should utilities with multiple-reactor sites be required to obtain coverage for each unit separately or is site coverage sufficient?

3. To what extent, if any, should the NRC become involved with the structure and terms and conditions of the property insurance offered? The regulations currently in effect are limited to NRC licensees and license applicants. So far, the NRC has imposed no requirements impinging on the business operations of the insurers. However, Professor Long has made certain recommendations that would put the NRC in the position of requiring utility licensees to maintain property insurance coverage acceptable to the NRC. As an example, Professor Long cites the practice of one insurer that does not discount its premiums when an insured buys co-extensive coverage both from it and another insurer. He recommends that the NRC accept no insurance that does not include such discounted premium provisions. Would that and similar NRC policies represent an unreasonable burden on insurers?

Professor Long suggests that the use of retroactive assessments may be reaching the limits of sound insurance practice and recommends that retroactive insurance be eliminated from any future coverage.

Should the NRC refuse to accept such coverage to satisfy its requirements? Is concern with overuse of retroactive assessments warranted?

As a corollary issue, should the NRC address the issue of whether, as a matter of public policy, it should require that all proceeds from property insurance be used to pay for decontamination after an accident before claims of creditors and owners are satisfied? What would be the legal basis for such a requirement?

4. Should the NRC become involved in regulating the replacement power insurance program as currently offered by NEIL and described in NUREG–0891? Would more capacity for property insurance become available if replacement power insurance were no longer issued? Is replacement power insurance necessary, or is it sufficient and relatively equitable to collect such charges through rates?

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting equirements.

(Sec. 161, Pub. L. 83–703, 68 Stat. 948, as amended, 42 U.S.C. 2201)

Dated at Bethesda, Maryland this 15th day of June 1982.

For the Nuclear Regulatory Commission.

William J. Dircks,

Executive Director for Operations.

47 FR 33980
Published 8/5/82
Comment period expires 10/4/82. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on on or before this date.

10 CFR Part 50

Personnel With Unescorted Access to Protected Areas; Fitness for Duty

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Commission is proposing to amend its regulations to require commercial and industrial facilities licensed under 10 CFR 50.22 (primarily nuclear power plant licensees) to establish and implement controls designed to assure that personnel with

unescorted access to protected areas are not under the influence of drugs or alcohol or otherwise unfit for duty. The proposed rule was developed because of a concern that certain personnel could become unfit for duty due to the effects of substances such as alcohol or drugs and, thereby, could perform actions that might adversely impact the health and safety of the public. The result of the proposed rule would be the implementation of fitness for duty programs industry-wide that would be designed to provide greater assurance of safer and more reliable operation of nuclear facilities.

DATES: Comment period expires October 4, 1982. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Submit written comments and suggestions on the proposal and/or the supporting value/impact analysis to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Single copies of the value/impact analysis may be obtained on request from the contact person listed below. Copies of comments received on the proposed amendment and the value/impact analysis may be examined and copied for a fee in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C. between 8:15 a.m. and 5:00 p.m.

FOR FURTHER INFORMATION CONTACT: Ellis W. Merschoff, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 443–5942.

SUPPLEMENTARY INFORMATION: The Commission has found that the number of reported drug-related incidents in which licensee or contractor employees were arrested or terminated has increased substantially over the past three years. In 1979 there was one such reported incident, in 1980 there were five, and in 1981 there were twelve. These incidents have involved both onsite use or possession of drugs and personnel reporting to work under the influence of controlled substances. Marijuana has been the most frequently reported controlled substance involved in these incidents; however, incidents involving amphetamines, cocaine, hashish, phencyclidine, and methaqualone have also been reported.

As a result of these incidents, the NRC Office of Inspection and Enforcement (IE) has established a Drug Abuse Task Force to develop a generic approach to the problem of possible drug (including alcohol) abuse by licensee or contractor personnel. IE is developing a NUREG report which describes current practice regarding the abuse of drugs and alcohol by other regulatory organizations and by industry. The NUREG report, entitled "Survey of Industry and Government Programs to Combat Drug and Alcohol Abuse," should prove useful to licensees when they develop the fitness for duty programs that would be required by the proposed rule.

The proposed rule would apply to the licensees' employees and contractor personnel with unescorted access to protected areas of facilities issued operating licenses under 10 CFR 50.21(b) or 10 CFR 50.22. This category of personnel was chosen because any person with unescorted access to a protected area may have the opportunity to affect adversely the health and safety of the public through an unobserved act, whether intentional or inadvertent. It does not include NRC personnel.

Persons would be considered unfit for duty if their faculties were affected in a way contrary to safety by substances such as alcohol or drugs. Additionally, the phrase "* * * or otherwise unfit for duty * * *" is intended to require consideration of the effects of other factors when determining an individual's fitness for duty such as fatigue, stress, illness, and temporary physical impairments.

The proposed rule would require commercial and industrial facilities licensed under 10 CFR 50.22 to establish, document, and implement procedures to assure that personnel with unescorted access to the protected area of the licensed facility are not unfit for duty.

At this time, establishment of specific criteria to be used to determine fitness for duty and specific methods of implementation of this requirement have been left to the licensee. The Commission solicits public comment on (1) the establishment of specific fitness criteria (such as the Federal Aviation Administration's regulations regarding crew members of civil aircraft in 14 CFR 91.11(a)) for nuclear plant personnel; (2) specific methods of implementation of the Fitness for Duty Rule, including the use of breath tests, background investigations, psychological tests, behavioral observation programs, employee awareness programs, employee assistance programs, and other possible implementation measures; and (3) limiting the scope of the rule to personnel with unescorted access to vital areas (generally, a protected area is any area encompassed by physical barriers and to which access is controlled, while a vital area is any area that contains vital equipment. These terms are specifically defined in 10 CFR 73.2).

The Commission wants to allow each licensee to develop procedures which take into consideration not only fairness to and due process for its employees, but also any conditions or circumstances unique to its facility. Therefore, the proposed rule is broadly worded. The Commission invites public comment on the level of specificity that should be included in the proposed rule. Commissioner Gilinsky has requested comments on whether the rule should also apply to NRC personnel and on whether there should be specific blood alcohol level limits.

Paperwork Reduction Act

As required by Pub. L. 96–511, this proposed rule has been submitted to the Office of Management and Budget for clearance of its information collection requirements.

Regulatory Flexibility Act Certification

Based upon the information available at this stage of the rulemaking proceeding and in accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that, if promulgated, this rule will not have a significant economic impact on a substantial number of small entities. This proposed rule affects personnel with unescorted access to protected areas of facilities licensed under the provisions of 10 CFR 50.22 for which an operating license has been granted. The companies that own these facilities do not fall within the scope of "small entities" set forth in the Regulatory Flexibility Act or the small business size standards set out in regulations issued by the Small Business Administration in 13 CFR Part 121. While it is recognized that the contractors may fall within the scope of small entities, it has been determined that the impact on those contractors due to the implementation of this rule does not meet the threshold of a significant economic impact. However, if any independent contractor who services nuclear power plants or components believes there would be significant economic impact, the contractor should comment on this to the Commission.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting requirements.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

For the reasons set out in the preamble and pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of Title 5 of the United States Code, notice is hereby

given that adoption of the following amendment to 10 CFR Part 50 is contemplated.

1. The authority citation for Part 50 continues to read as follows:

Authority: Secs. 103, 104, 161, 182, 183, 186, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2239): secs. 201, 202, 206, 88 Stat. 1243, 1244, 1246, (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80–50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Sections 50.100–50.102 issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10 (a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10 (b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. A new paragraph (y) is added to § 50.2 to read as follows:

§ 50.2 Definitions.

• • • • •

(y) "Protected area" means an area encompassed by physical barriers and to which access is controlled.

3. A new paragraph (x) is added to § 50.54 to read as follows:

§ 50.54 Conditions of licenses.

• • • • •

(x)(1) Each licensee with an operating license issued under § 50.21(b) or § 50.22 shall establish, document, and implement adequate written procedures designed to ensure that, while on duty, the licensee's and its contractors' personnel with unescorted access to protected areas are not—

(i) Under the influence of alcohol;

(ii) Using any drugs that affect their faculties in any way contrary to safety; or

(iii) Otherwise unfit for duty because of mental or temporary physical impairments that could affect their performance in any away contrary to safety.

(2) Each licensee shall maintain the written records of these procedures for the life of the plant.

Dated at Washington, D.C. this 30th day of July, 1982.

For the Nuclear Regulatory Commission.

John C. Hoyle,

Acting Secretary of the Commission.

48 FR 14926
Published 4/6/83
Comment period expires 5/6/83. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

Temporary Operating Licenses

See Part 2 Proposed Rule Making

48 FR 22730
Published 5/20/83
Comments should be filed with the Commission's Secretary not later than 7/5/83. Comments received after this date will be considered if it is practicable to do so, but assurance of consideration cannot be given except as to comments received on or before that date.

10 CFR Parts 50 and 51

Requirements for Licensee Actions Regarding the Disposition of Spent Fuel Upon Expiration of the Reactors' Operating Licenses

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Commission has determined, in a separate proceeding known as the "Waste Confidence" rulemaking proceeding that there is reasonable assurance that one or more mined geologic repositories for commercial high-level radioactive waste and spent fuel will be available by 2007–2009. However, the Commission recognizes that there are circumstances under which spent fuel generated prior to that time may remain at reactor sites after the expiration of reactor operating licenses. Some reactor operating licenses will expire or the permanent shutdown of some reactors could occur prior to the 2007–2009 period. Also, since there are not expected to be any safety or environmental problems which would create a need to move fuel offsite, there is some possibility that an election of onsite spent fuel storage after reactor operating license operation may be appropriate. The Commission has considered the safety and environmental impacts of such extended spent fuel storage in the "Waste Confidence" proceeding and for the reasons discussed therein and highlighted below, finds that extended storage for up to 30 years after the expiration of an operating license will result in no significant safety or environmental impacts. The Commission believes there is reasonable assurance that no later than 30 years after the expiration date of the operating license for any commercial power reactor, sufficient repository capacity will have been made available to dispose of all commercial high-level radioactive waste and spent fuel in existence. Thus there is no reasonable probability that spent fuel will unavoidably remain at a reactor site at the end of that 30-year period. Accordingly, the Commission hereby proposes a rule providing that the environmental and safety implications of spent fuel storage after the termination of reactor operating licenses need not be considered further in Commission proceedings for the issuance of an operating license or licensee amendment for a nuclear power plant, despite some probability that such storage may be elected or necessary. The proposed rule also applies to proceedings for licensing spent fuel storage in independent spent fuel storage installations under Part 72, since the same safety and environmental considerations apply as for storage in reactor basins.

The Commission hereby proposes a rule whereby in proceedings for licensing of facilities at which spent fuel will be stored, or proceedings for licensing the expansion of storage capacity at existing facilities, the NRC will continue to require consideration of reasonable foreseeable safety and environmental impacts of spent fuel storage for the period of the license or amendment applied for but will not require consideration of the safety and environmental impacts of storage of spent fuel beyond the expiration of the license or amendment applied for. However, the Commission's proposed rule would require reactor licensees to submit their plans for NRC review and approval 5 years before their operating licenses expire on specifically how spent fuel at these sites will be managed.

Accordingly, the Commission hereby proposes amendments to the Code of Federal Regulations which define procedures to be followed by the licensee to ensure the continued safe management of spent fuel beyond the expiration date of reactor operating licenses and which address the environmental aspects of extended spent fuel storage past the expiration of reactor operating licenses or license for storage in an independent spent fuel storage installation. The amendments are set forth here to complement and complete the Commission findings resulting from the Waste Confidence rulemaking proceeding.

DATES: Comments should be filed with the Commission's Secretary not later than July 5, 1983. Comments received after this date will be considered if it is practicable to do so, but assurance of consideration cannot be given except as to comments received on or before that date.

ADDRESSES: Send comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Attn.: Docketing and Service Branch.

Hand deliver comments to: Room 1121, 1717 H St., N.W., Washington, D.C. between 8:15 a.m. and 5:00 p.m.

Examine comments received at: The NRC Public Document Room, 1717 H St., N.W., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Dennis Rathbun or Clyde Jupiter, Office of Policy Evaluation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (202) 634–3295.

SUPPLEMENTARY INFORMATION:

Background

By a Notice of Proposed Rulemaking dated October 18, 1979, 44 FR 61372 (October 25, 1979), the Nuclear Regulatory Commission ("Commission" or "NRC") began a generic rulemaking proceeding "to reassess its degree of confidence that radioactive wastes produced by nuclear facilities will be safely disposed of, to determine when any such disposal will be available, and whether such wastes can be safely stored until they are safely disposed of." This proceeding became known as the "Waste Confidence" rulemaking proceeding, and was conducted partially in response to a remand by the United States Court of Appeals for the D.C. Circuit. *State of Minnesota* v. *NRC*, 602 F.2d 412 (1979). *State of Minnesota* involved a challenge to license amendments to permit the expansion of spent fuel pool storage capacities at two

nuclear powerplants. It was contended that uncertainty regarding ultimate disposal of commercial nuclear wastes required the Commission to consider the safety and environmental implications of storing spent fuel in the pools for an indefinite period following expiration of the plants' operating licenses. The Commission had excluded consideration of such long-term on-site storage from the license amendment proceedings, relying on its earlier finding that safe permanent disposal of reactor wastes would be available when needed.

The Court of Appeals agreed with the Commission that, in accordance with the "rule of reason" implicit in the National Environmental Policy Act (NEPA), impacts of extended on-side storage of spent fuel need not be considered in licensing proceedings unless such storage was reasonably foreseeable and not merely a theoretical possibility. The Court held, however, that the Commission's statement of reasonable confidence in the timely availability of waste disposal solutions was "not the product of a rulemaking record devoted expressly to considering the question" and furthermore did not address the particular problem whether disposal solutions would be available before the expiration of plant operating licenses. *Id.* at 417. Accordingly, the D.C. Circuit remanded to the Commission for determination "whether there is reasonable assurance that an off-site storage solution will be available by the years 2007–09, the expiration of the plants operating licenses, and if not, whether there is reasonable assurance that the fuel can be stored safely at the site beyond those dates." *Id.* at 418. The Court noted that "the breadth of the questions involved and the fact that the ultimate determination can never rise above a prediction suggest that the determination may be a kind of legislative judgment for which rulemaking would suffice." *Id.* at 417. The Court agreed that the Commission "may proceed in these matters by generic determinations." *Id.* at 419. *Accord, Potomac Alliance* v. *NRC*, 682 F.2d 1030 (D.C. Cir. 1982).

Amendment to Part 51

The Commission announced the conclusions it reached in the Waste Confidence rulemaking proceeding. The Commission found that there is reasonable assurance that one or more mined geologic repositories for commercial high-level radioactive waste and spent fuel will be available by 2007–09. However, some reactor operating licenses may expire without being renewed or some reactors may be permanently shut down prior to this period. Since independent spent fuel storage installations have not yet been extensively developed, there is then a probability that some onsite spent fuel storage after license expiration may be necessary or appropriate. In addition, the Commission also realizes that some spent fuel may be stored in existing or new storage installations for some period beyond 2007–2009. The Commission hereby proposes a rule providing that the environmental and safety implications of such storage after the termination of reactor operating licenses need not be considered in Commission proceedings related to issuance or amendment of a reactor operating license. This rule has the effect of continuing the Commission's practice, employed in the proceedings reviewed in *State of Minnesota*, of limiting considerations of safety and environmental impacts of spent fuel storage in licensing proceedings to the period of the license in question and not requiring the NRC staff or the applicant to address the impacts of extended storage past expiration of the license applied for. The rule relies on the Commission's generic determination in the Waste Confidence proceeding that the licensed storage of spent fuel for 30 years beyond the reactor operating license expiration either at or away from the reactor site is feasible, safe, and would not result in a significant impact on the environment. For the reasons discussed in the Waste Confidence decision, the Commission believes there is reasonable assurance that adequate disposal facilities will become available during this 30-year period. Thus, there is no reasonable probability that storage will be unavoidable past the 30-year period in which the Commission had determined that storage impacts will be insignificant. The same safety and environmental considerations apply to fuel storage installations licensed under Part 72 as for storage in reactor basins. Accordingly, in licensing actions involving (a) the storage of spent fuel in new or existing facilities, or (b) the expansion of storage capacity at existing facilities, the NRC will continue to require consideration of reasonably foreseeable safety and environmental impacts of spent fuel storage only for the period of the license applied for. The amendment to 10 CFR Part 51 confirms that the environmental consequences of spent fuel storage in reactor facility storage pools or independent spent fuel storage installations for the period following expiration of the reactor or facility license or amendment applied for need not be addressed in any environmental report, impact statement, impact assessment, safety analysis report, or other analysis prepared in connection with the reactor operating license or amendment to the operating license, or initial license for an independent spent fuel storage installation, or amendment thereto.

The Commission's conclusions with respect to safety and environmental impacts of extended storage beyond expiration of current operating licenses are supported by the record in NRC's waste confidence proceeding and by NRC's experience in more than 80 individual safety and environmental evaluations conducted in storage licensing proceedings. The record of the Waste Confidence proceeding indicates that significant release of radioactivity from spent fuel under licensed storage conditions is highly unlikely because of the resistance of the spent fuel cladding against corrosive mechanisms and the absence of any conditions that would provide a driving force for dispersal of radioactive material. The non-radiological environmental impacts associated with site preparation and construction of storage facilities are and will continue to be considered by the NRC at the time applications are received to construct these facilities, which are licensed under NRC's regulations in either 10 CFR Part 50 for reactors or 10 CFR Part 72 for independent spent fuel storage installations. There are no significant additional non-radiological consequences which could adversely affect the environment for storage past the expiration of operating licenses at reactors and independent spent fuel storage installations.

The amendment to Part 51 published here consists of two parts: paragraph (e)(1) and paragraph (e)(2). Paragraph (e)(1) is a restatement of a final generic Commission determination based on the Waste Confidence rulemaking proceeding, while paragraph (e)(2) establishes the procedures for implementing that generic determination in individual licensing cases. The Commission requests public comment on paragraph (e)(2).

Amendment to Part 50

The Commission is also proposing an amendment to 10 CFR Part 50 as set forth here, concerning the management of spent fuel from nuclear power reactors whose operating licenses may expire prior to the availability of a repository. The procedures established by this amendment are intended to confirm that there will be adequate lead time for whatever actions may be needed at individual reactor sites to assure that the management of spent fuel following the expiration of the reactor operating license will be accomplished in a safe and environmentally acceptable manner.

The Commission proposes that Part 50, § 50.54 be amended to establish requirements that the licensee for an

operating nuclear power reactor shall no later than 5 years prior to expiration of the reactor operating license submit plans for NRC review and approval of the actions which the licensee proposes for management of all irradiated fuel at the reactor upon expiration of its operating license. No specific course of action is required of the licensee by the NRC. Licensee actions could include, but are not necessarily limited to, continued storage of spent fuel in the reactor spent fuel storage basin; storage in an independent spent fuel storage installation (refer to 10 CFR § 72.3(m)) located at the reactor site or at another site; transshipment to and storage of the fuel at another operating reactor site in that reactor's basin; reprocessing of the fuel if it appears that licensed reprocessing facilities will be available; or disposal of the fuel in a repository. The proposed actions must be consistent with NRC requirements for licensed possession of irradiated or spent fuel (as defined in §72.3(v)) and must be capable of being authorized by the NRC and implemented by the licensee on a timely basis. The licensee's plans must specify how the financial costs of extended storage or other disposition of spent fuel will be funded. Further, the licensee's plans must describe the proposed disposition of all irradiated fuel from the reactor. The licensee shall notify the NRC of any significant changes to these plans; changes are not precluded provided that the licensee maintains the capability to manage the spent fuel safely.

The Commission notes that extended storage of spent fuel at a reactor beyond the expiration date of the operating license will require an amendment to the Part 50 license to cover possession only of the reactor and spent fuel under the requisite provisions of Parts 30, 50 and 70, or an athorization pursuant to Part 72, "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation" (ISFSI). This rulemaking does not alter the requirements and provisions of Part 72 with respect to environmental considerations (§ 72.20), nor provisions of Part 51 (§ 51.5(a)(10) and §51.5(b)(4)(iv)) with respect to the performance of environmental assessments of the impacts of spent fuel storage in an independent spent fuel storage installation or extended storage in a reactor spent fuel pool. This means that the NRC staff will continue to perform environmental reviews before issuing a license under 10 CFR Part 72 or an amendment for extend storage under 10 CFR Part 50. Notice of the receipt of a license application for storage of spent fuel pursuant to Part 72 will be published in the **Federal Register.**

Related Commission Actions

On March 13, 1978, an Advance Notice of Proposed Rulemaking was published by NRC in the **Federal Register** (43 FR 10370) that indicated that the NRC was reevaluating its decommissioning policy and considering amending its regulations to provide more specific guidance on decommissioning of nuclear facilities. In January 1981, NRC published a "Draft Generic Environmental Impact Statement on Decommissioning Nuclear Facilities" (NUREG-0586). Proposed amendments to 10 CFR Parts 30, 40, 50, 70, and 72 are being prepared by the NRC staff for Commission consideration. The proposed amendments for decommissioning would allow unrestricted use of a reactor or independent spent fuel storage installation site and would permit termination of the license. However, the storage of irradiated fuel either in a reactor basin or in an independent spent fuel storage installation would require restricted access and management of the storage facility to protect public health and safety. Thus, any continued storage of spent fuel beyond expiration of an operating license would be licensed under either Parts 50 or 72 and could preclude final decommissioning of the site.

Amendments

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, Section 301 of Public Law 96-295, and Section 553 of Title 5 of the United States Code, notice is hereby given that adoption of the following amendments to Parts 50 and 51 of Title 10, Chapter 1, of the Code of Federal Regulations is contemplated.

The Commission requests public comment on the proposed new paragraph, 10 CFR 50.54(x), to be added to 10 CFR Part 50. The Commission also requests public comment on the proposed new paragraph 10 CFR 51.5(e)(2), to be added to 10 CFR Part 51. The Commission does not request comment on the proposed paragraph, 10 CFR 51.5(e)(1), which restates a conclusion of the Commission's "Waste Confidence" proceeding.

List of Subjects

10 CFR Part 50

Administrative practice and procedure, Antitrust, Classified information, Emergency medical services, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

10 CFR Part 51

Administrative practice and procedure, Environmental impact statement, Nuclear materials, Nuclear power plants and reactors, Reporting and recordkeeping requirements.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. In § 50.34 immediately following paragraph (w), a new paragraph (x) is added to read as follows:

§ 50.54 Conditions of licenses.

Whether stated therein or not, the following shall be deemed conditions in every license issued.

* * * * *

(x) For operating nuclear power reactors, the licensee shall, no later than 5 year before expiration of the reactor operating license, submit written notification to the Commission for its review and approval of the program by which the licensee intends to manage and provide funding for the management of all irradiated fuel at the reactor upon expiration of the reactor operating license until ultimate disposal of the spent fuel in a repository. The licensee must demonstrate to NRC that the elected actions will be consistent with NRC requirements for licensed possession of irradiated nuclear fuel and that the actions will be implemented on a timely basis. Where implementation of such actions require NRC authorizations, the licensee shall verify in the notification that submittals for such actions have been made to NRC and shall identify them. A copy of the notification shall be retained by the licensee as a record until expiration of the reactor operating license. The licensee shall notify the NRC of any significant changes in the proposed waste management program as described in the initial notification.

PART 51—LICENSING AND REGULATORY POLICY AND PROCEDURES FOR ENVIRONMENTAL PROTECTION

1. The authority citation for Part 51 is revised to read as follows:

Authority: Sec. 161, 68 Stat. 948, as amended (42 U.S.C. 2201); secs. 201, as amended, 202, 88 Stat. 1242 as amended, 1244 (42 U.S.C. 5841, 5842); National Environmental Policy Act of 1969, secs. 102, 104, 105, 83 Stat. 853, 854, as amended (42 U.S.C. 4332, 4334, 4335).

2. In § 51.5 immediately following paragraph (d)(4) a new paragraph (e) is added to read as follows:

§ 51.5 Actions requiring preparation of environmental impact statements, negative declarations, environmental impact

appraisals; actions excluded.

• • • • •

(e)(1) The Commission has made a generic determination that no significant environmental impacts will result from the storage of spent fuel for up to 30 years or more beyond the expiration of reactor operating licenses in onsite reactor facility storage pools or independent spent fuel storage installations located at reactor or away-from-reactor sites. Further, the Commission believes there is reasonable assurance that one or more mined geologic repositories for commercial high-level radioactive waste and spent fuel will be available by the years 2007–09, and that sufficient repository capacity will be available within 30 years beyond expiration of any reactor operating license to dispose of commercial high-level radioactive waste and spent fuel originating in such reactor and generated up to that time.

(2) Accordingly, the environmental consequences of spent fuel storage in reactor facility storage pools or independent spent fuel storage installations for the period following expiration of the reactor or storage installation license applied for need not be addressed in any environmental report, impact statement, impact assessment, safety analysis report, or other analysis prepared in connection with a reactor operating license or amendment to the operating license or initial license for an independent spent fuel storage installation, or amendment thereto. This rule does not alter any pre-existing regulatory requirements for consideration in licensing proceedings of safety or environmental consequences of spent fuel storage for the term of the license or amendment applied for.

Dated at Washington, D.C. this 18th day of May 1983.

For the Commission.[1]

Samuel J. Chilk,

Secretary of the Commission.

Commissioner Gilinsky's Separate Views Regarding Proposed Amendments to 10 CFR Parts 50 and 51 (Waste Confidence Proceeding)

May 13, 1983.

The current generation of nuclear power plants was licensed on the assumption that spent fuel would be retained on site for a brief period, prior to being sent away for reprocessing. It has now become obvious that the spent fuel will, in fact, be kept on-site for an extended period of time, in many cases beyond the operating life of the plants.

The Commission apparently recognizes that its past assumptions on the disposition of spent fuel no longer hold true but is doing nothing about this beyond making a broad finding that extended on-site storage is acceptable from the point of view of safety. While I agree that there is no obstacle in principle to extended on-site storage, I think it is clear that each power reactor site will have to be examined in detail. The rule proposed by the Commission puts off addressing the practical aspects of this problem for many years, and in some cases, decades.

In the case of new reactors which are applying for operating licenses, the rule should require the utility to show that there will be no impediment to storing on-site the spent fuel which will be generated during the plant's useful life. In view of the uncertainties about the availability of off-site disposal capacity, the Commission should, in addition, require a showing that there is no impediment to continuing such storage for some reasonable period of time after the likely end of operation. The utilities should also be required to commit themselves formally to financing on-site fuel storage until the fuel can be moved off-site. In the case of reactors which are already in operation, the utilities should be asked to make similar showings within a few years.

[1] Commissioner Gilinsky dissented from this action and his separate views are attached.

≫48 FR 31050

Published 7/6/83

Submit comments by 9/6/83. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

10 CFR Part 50

Protection of Employees Who Provide Information

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission is considering amending its regulations governing the domestic licensing of production and utilization facilities, principally nuclear power reactors, to require each licensee, permittee, and applicant to include in its procurement documents a provision which requires that contractors and subcontractors post a notice to employees related to employee protection. The required notice would contain information notifying employees that an employer is prohibited from discriminating against an employee engaging in protected activities and that an employee may seek a remedy for prohibited discrimination by filing a complaint with the Department of Labor. The proposed amendment would affect licensees, permittees, applicants, and their contractors and subcontractors who are contractually responsible for construction of basic components or production and utilization facilities.

DATE: Submit comments by September 6, 1983.

Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Send comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, ATTN: Docketing and Service Branch. Copies of comments received may be examined in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: A. J. DiPalo, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, (301)443–5997.

SUPPLEMENTARY INFORMATION:

Background

On July 14, 1982, the Commission published in the **Federal Register** (47 FR 30452) a final rule that, among other things, amended its regulation 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," by adding a new § 50.7, "Employee Protection." Similar amendments were made at that time to Commission regulations applicable to other types of Commission licensees. The amendments were intended (1) to complement Section 210, "Employee Protection," of the Energy Reorganization Act of 1974, as amended, 42 U.S.C. 5851, (2) to establish a framework for the direct protection of employees of NRC licensees, permittees and applicants, including their contractors and subcontractors and others who assist or participate in any proceeding under the Energy Reorganization Act or the Atomic Energy Act, or assist or participate in any other action to carry out the purposes of the Acts, and (3) to complement the Department of Labor's regulations related to this matter (29 CFR Part 24).

Under Section 161 of the Atomic Energy Act of 1954, as amended, the Commission is authorized to obtain necessary information to assist the exercise of its other Atomic Energy Act authorities. Pursuant to that authority, the Commission seeks to insure that licensee, permittee or applicant conduct does not interfere with the Commission's ability to obtain necessary health and safety information. Prohibiting licensee, permittee and applicant discrimination against employees who provide information or assistance to the Commission is one way of preserving the free flow of health and safety information to the Commission and of protecting the Commission's ability to obtain such information.

Section 210 of the Energy Reorganization Act identifies specific acts of employees as protected activities, e.g., providing information to the NRC about possible violations of the Atomic Energy Act or the Energy Reorganization Act, requesting the Commission to institute action against any person for the administration or enforcement of requirements of these laws, and testifying in any Commission proceeding. Section 210 prohibits employers from discriminating against employees who engage in protected activities and provides the Department of Labor (DOL) with authority to investigate complaints of discrimination and to provide a remedy to employees following an administrative proceeding in the Department of Labor. DOL may order reinstatement of an employee terminated in violation of Section 210, with back pay and compensatory damages. Under Section 161 of the Atomic Energy Act, the Commission may act to protect its sources of health and safety information. Under Section 210 of the Energy Reorganization Act, the Department of Labor may act to protect employees.

On October 12, 1982, the amendments to Part 50 discussed above became effective. They require licensees, permit holders, and those persons that have had a license application pending with the Commission for over 30 days to post on their premises Form NRC–3. Form–3, among other things, advises employees of their protection against discrimination and the availability of a remedy through a Department of Labor administrative proceeding.

In the course of adopting the final rule noted above the Commission further directed its staff to prepare a proposed rule that would require contractors and subcontractors of licensees, permittees, and applicants for licenses and permits for production and utilization facilities (primarily nuclear power reactor facilities) to post Form NRC–3 on their premises. The Commission believes that in addition to preserving the free flow of necessary health and safety information between the Commission and employees of its licensees, permittees and applicants, it is equally important to establish a similarly unrestricted flow of information to the Commission from contractor and subcontractor employees where they may have important health and safety information. This proposed rule responds to the Commission's directive.

The Proposed Rule

As proposed, § 50.7(e) would include a new requirement that licensees, permittees, and applicants for Commission licenses and permits for production and utilization facilities insert a contractual provision in their procurement documents which obligates their contractors that construct production and utilization facilities or basic components to post Form NRC–3 on the contractor or subcontractor's premises. The procurement documents must also specify that the contractor will by contract with its subcontractors require its subcontractors to post NRC Form 3. This requirement would apply only with respect to subcontractors who construct production and utilization facilities or basic components. The proposed rule is intended to ensure that all employees protected by § 50.7 are aware that commencing or participating in Commission proceedings, and providing information or assistance to the Commission are protected activities; that discrimination in employment for these activities is prohibited by statute and by regulation and that a remedy for discrimination is available through the Department of Labor.

The rule as proposed is limited to contractors and subcontractors of licensees, permittees, or license applicants for production or utilization facilities (entities subject to 10 CFR Part 50). This proposed rule covers only those contractors and subcontractors who might violate requirements imposed under the Atomic Energy Act or Energy Reorganization Act in the course of supplying goods and services to Commission licensees, permittees, and applicants.

Employee discrimination complaints filed against these organizations (which number less than 2% of all organizations holding specific NRC licenses), account for over 90% of the proceedings initiated by the Department of Labor pursuant to ¶ 210 of the Energy Reorganization Act of 1974. If experience warrants, the Commission will consider further rulemaking to require other types of Commission licensees to ensure that their contractors and subcontractors also post Form NRC–3.

The proposed rule would extend the postiong requirements to contractors and subcontractors of Part 50 licensees, permittees, or applicants that are contractually responsible for constructing facilities or basic components. The terms "constructing" and "basic component" are terms-of-art which are presently defined in the Commission's regulation, 10 CFR Part 21, "Reporting of Defects and Noncompliance."

The Commission's experience in adopting and amending 10 CFR Part 21, "Reporting of defects and noncompliance," indicates that the Commission can identify contractors and subcontractors who are contractually responsible for a basic component to be used in a production or utilization facility as a class of contractors and subcontraciors who might violate requirements imposed by the Atomic Energy Act or the Energy Reorganization Act. "Basic component" is a term-of-art defined in 10 CFR Part 21 and is limited to those items and services in which a defect or failure to comply could create a substantial safety hazard.

The key point is that "basic component" is defined to exclude "commercial grade items" as set out in 10 CFR Part 21. On this basis, contractors and subcontractors who supply commercial grade items (which have no safety implications) are not subject to the procedures of 10 CFR Part 21. Those same contractors and subcontractors who supply commercial grade items are not required to post Form NRC–3 under the requirements of the proposed rule.

Since these definitions have been used in Part 21 for several years, the meaning of these terms and the scope of the posting requirement should be well understood. For administrative convenience, the definition of "constructing" and "basic component" now contained in Part 21 are proposed for inclusion in the definition section of Part 50 essentially without change. In addition, the term "procurement document," defined in § 21.3(i) of Part 21, is also proposed for inclusion in Part 50.

As proposed, § 50.7(e) would continue to require posting of NRC Form 3's at locations sufficient to permit employees covered by § 50.7 to observe a copy on the way to or from their place of work. Under the proposed rule, affected contractors and subcontractors would also be required to post NRC Form 3 at locations on their premises sufficient to permit their employees to observe a copy on the way to or from their place of work.

Contractors or subcontractors who would be subject to the posting requirement in proposed § 50.7(e) may obtain copies of Form NRC–3 from the following sources:

1. By writing to the Director, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555;

2. By writing to the Regional Administrator of any Commission Regional Office listed below:

U.S. Nuclear Regulatory Commission, Region I, 631 Park Avenue, King of Prussia, PA 19406

U.S. Nuclear Regulatory Commission, Region II, 101 Marietta St., N.W., Suite 3100, Atlanta, GA 30303

U.S. Nuclear Regulatory Commission, Region III, 799 Roosevelt Road, Glen Ellyn, IL 60137

U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 1000, Arlington, TX 76011

U.S. Nuclear Regulatory Commission,

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Region V, 1450 Maria Lane, Suite 210, Walnut Creek, CA 94596, or

3. By request from the licensees, permittees, and applicants to whom they are contractually responsible.

The rule does not require licensees, permittees and applicants to provide copies of Form 3. The Commission expects them to do so as a matter of convenience to their contractors and subcontractors.

The NRC staff if currently undertaking a revision to NRC Form 3 in response to comments received from the Commission to make it clearer and more graphic.

Paperwork Reduction Act Statement

This proposed rule contains no information collection requirements and therefore, is not subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501, et seq.).

Regulatory Flexibility Act Certification

Based upon the information available at this stage of the rulemaking proceeding and in accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that, if promulgated, this rule will not have a significant economic impact on a substantial number of small entities. This rule as proposed affects Commission licensees, permittees, applicants, and contractors and subcontractors of Commission licensees, permittees, and applicants governed by the provisions of 10 CFR Part 50. The companies that own production and utilization facilities licensed under 10 CFR Part 50 do not fall within the Scope of "small entities" set forth in the Regulatory Flexibility Act or the small business size standards set out in regulations issued by the Small Business Administration in 13 CFR Part 121. Some affected contractors and subcontractors may be small entities, however, the Commission has determined that the impact on those contractors and subcontractors due to the implementation of this rule will not meet the threshold of a significant economic impact. This conclusion is based on the fact that the physical task of posting Form NRC–3 is unlikely to result in significant costs to those required to post Form 3. Any affected contractor or subcontractor who believes there would be a significant economic impact imposed upon small entities as a result of adoption of the proposed rule should comment on this matter to the Commission.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire Prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and Section 553 of Title 5 of the United States Code, notice is hereby given that adoption of the following amendments to 10 CFR Part 50 is contemplated.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 is revised to read as follows:

Authority: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2236, 2239, 2282); secs. 201, 202, 206, 88 Stat. 1242, 1244, 1246, as amended (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Section 50.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Sections 50.58, 50.91 and 50.92 also issued under Pub. L. 97–415, 96 Stat. 2073 (42 U.S.C. 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80–50.81 also issued under Sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 50.100–50.102 also issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10 (a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161(b), 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10 (b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. In § 50.2, new paragraphs (y), (z), and (aa) are added to read as follows:

§ 50.2 Definitions.

* * * * *

(y)(1) "Basic component," when applied to a nuclear power reactor means a plant structure, system, component, or part thereof necessary to assure (i) the integrity of the reactor coolant pressure boundary, (ii) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (iii) the capability to prevent or mitigate the consequences of accidents which could result in potential offsite exposures comparable to those referred to in § 100.11 of this chapter.

(2) "Basic component," when applied to other facilities and when applied to other activities licensed pursuant to this part, means a component, structure, system, or part thereof that is directly procured by the licensee of a facility or activity subject to the regulations in this part and in which a defect or failure to comply with any applicable regulation in this chapter, order, or license issued by the Commission could create a substantial safety hazard.

(3) In all cases "basic component" includes design, inspection, testing, or consulting services important to safety that are associated with the component hardware, whether these services are performed by the component supplier or others.

(4) A commercial grade item is not a part of a basic component until after that item is designated for use as a basic component.

(z) "Constructing" or "construction" means the design, manufacture, fabrication, placement, erection, installation, modification, inspection, or testing of a facility of activity which is subject to the regulations in this part and consulting services related to the facility or activity that are important to safety.

(aa) "procurement document" means a contract that defines the requirements which facilities or basic components must meet in order to be considered acceptable by the purchaser.

3. In § 50.7, paragraph (e) is revised to read as follows:

§ 50.7 Employee protection.

* * * * *

(e)(1) Each licensee, permittee, and applicant shall post Form NRC–3, "Notice to Employees," on its premises:

(i) Not later than 30 days after an application is docketed;

(ii) While the application is pending before the Commission;

(iii) During the term of the license; and

(iv) For 30 days following license termination.

(v) At locations sufficient to permit employees covered by this section to observe a copy on the way to or from their place of work.

(2) Each licensee, permittee, and applicant shall ensure that each new procurement document or modification of an existing procurement document for a production and utilization facility or a basic component it issues specifies that the contractor post Form NRC–3 on its premises during the term of the contract which shall continue for 30 days following performance of all other contract requirements. Each new or amended procurement document must also specify that the contractor shall require its subcontractor who is contractually responsible for the construction of a production or utilization facility or a basic component to post Form NRC–3 on the subcontractor's premises during the term of the subcontract which shall continue for 30 days following performance of all other subcontract requirements. Posting must be at locations which permit employees covered by this section to observe a copy.

Note.—Copies of Form NRC–3 may be obtained by writing to the Regional

Administrator for the appropriate U.S. Nuclear Regulatory Commission Regional Office listed in Appendix D, Part 20 of this chapter or the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Dated at Washington, D.C., this 30th day of June, 1983.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

48 FR 44217
Published 9/28/83
Comment period expires 10/28/83. Comments received after this date will be considered if it is practical to do so but assurance of consideration cannot be given except as to comments received before this date.

10 CFR Part 50

Revision of Backfitting Process for Power Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: The Nuclear Regulatory Commission is initiating a rulemaking for the purpose of establishing requirements for the long-term management of its process for the imposition of new regulatory requirements for power reactors. This process, commonly referred to as "backfitting," can include both plant-specific changes and generic changes that are proposed to be applied to one or more classes of power reactors. The Commission is seeking responses to a number of broad policy questions before proceeding with proposed amendments to its regulations.

DATE: The comment period expires October 28, 1983. Comments received after this date will be considered if it is practical to do so but assurance of consideration cannot be given except as to comments received before this date.

ADDRESSES: Mail comments to: Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch.

Deliver comments to: Room 1121, 1717 H St. NW, Washington, D.C., between 8:15 a.m. and 5:00 p.m.

Examine copies of comments received at: The NRC Public Document Room, 1717 H St. NW, Washington, D.C.

FOR FURTHER INFORMATION CONTACT: William M. Shields, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: 301–492–8693.

SUPPLEMENTARY INFORMATION: The Commission is initiating a rulemaking

proceeding for the purpose of establishing requirements for the long-term management of its process for the imposition of new regulatory requirements for power reactors. This process, which can include both plant-specific changes and generic changes that are proposed to be applied to one or more classes of power reactors, is commonly referred to as "backfitting". The Commission intends, as the outcome of the proceeding, to replace its existing regulation (10 CFR 50.109) with a new rule. The Commission's interim policy on backfitting is being announced today in a Policy Statement that is being published elsewhere in this issue.

Section 50.109 provides the following standard for backfitting decisions: backfitting may be required if the Commission finds "that such action will provide substantial, additional protection which is required for the public health and safety or the common defense and security." On its face, this appears to be a relatively high standard, implied by the use of "substantial, additional protection . . . required." In practice, however, § 50.109 has rarely been formally invoked, and it is therefore difficult to tell whether this standard has actually been applied when backfit measures have been considered. The licensed industry argues that a lower standard has been used by the staff in licensing, while the staff argues that in most cases industry has voluntarily implemented new safety measures and has not insisted upon the formal application of the 50.109 standard. The Commission has decided that a standard (or standards) should be specified through rulemaking, and should be applied in backfitting decisions.

The Commission recognizes that the development of measures for the management of the backfitting process for power reactors involves a number of complex issues on which there exist several differing points of view. For example, in a recent presentation to the Commission, representatives of the Atomic Industrial Forum stated that "backfitting is the single most important issue in licensing reform." Among other things, they recommend a standard for backfitting that would impose a burden on the Commission to demonstrate clearly "that the proposed backfit will substantially enhance public health and safety as a result of improved overall safety of facility operations, and that such improvement is justified when considered over the remaining life of the facility." In contrast, the Report of the President's Commission on the Accident at Three Mile Island included the following recommendation to the NRC at page 63: "Included in the agency's general substantive charge should be the requirement to establish and explain safety-cost trade-offs; where additional safety improvements are not clearly outweighed by cost considerations, there should be a presumption in favor of the safety change."

The Commission has received specific backfitting rule proposals from its Regulatory Reform Task Force and from the Atomic Industrial Forum. (The latest AIF proposal is contained in a letter to the Commission dated July 7, 1983.) The Commission has also received the views of its Ad Hoc Committee for Review of Nuclear Reactor Licensing Reform Proposals on the backfitting issue. In addition, the Commission has recently provided directions to the NRC staff governing the interim management of the backfitting process for power reactors, including both generic and plant-specific backfitting proposals. Each of these documents and additional background material on the backfitting process are available in the Commission's Public Document Room.

Before proceeding with a proposed rule on backfitting, the Commission believes that it would be helpful to obtain the views of the electric utility licensees, other elements of the nuclear industry and the public on several specific questions regarding backfitting, on the backfitting rule proposals now before the Commission, and on other alternatives for the long-term management of the NRC backfitting process. The Commission is issuing this advance notice of proposed rulemaking for that purpose.

The Commission requests comments on the backfitting rule proposals submitted by its Regulatory Reform Task Force and by the Atomic Industrial Forum, as well as on other alternatives for the long-term management of the backfitting process. In addition, the Commission would appreciate responses to the following questions:

1. How should "backfitting" be defined?

a. Should backfitting management measures apply to proposed hardware changes, to proposed plant operations changes, to proposed training and staffing changes, to proposed information requests, to proposed requests for analysis or tests, or to other staff-proposed actions, and if so, why? Should they apply to new requirements that are intended to be imposed through rulemaking?

b. The Commission's interim directions to the NRC staff on management of the backfitting process define a backfit as a proposed new staff position or a proposed change in an existing staff position. Does this approach provide a useful and workable basis for defining proposed backfitting actions that should be subject to future backfitting management measures? What should be the baseline set of requirements from which a proposed new requirement or new interpretation of requirements for operating reactors are measured? Should there be a different baseline set of requirements for power reactors that have received a construction permit but have not yet received an operating license and if so, what should that baseline be? What is, or should be, the relationship between the backfitting basline for plants under construction and the baseline established by the construction permit which authorizes construction of the facility in accordance with principal architectural and engineering criteria required to be part of the application for a construction permit by 10 CFR 50.35(a)? Are there other practical alternatives for defining the scope of backfitting controls?

2. What standard should be adopted by the Commission for determining whether to impose a proposed backfitting requirement?

a. To what extent, if at all, should the standard involve the consideration of the expected economic costs of satisfying the requirement as well as the benefits and any adverse effects for safety that are expected to result from imposing the requirement? What factors should be included in these costs?

b. What types evaluations of benefits and costs should be required for proposed backfits to satisfy the standard? Should evaluations be prepared in the case of all backfitting proposals, only in those cases in which an informal appeal process has failed to resolve areas of licensee disagreement, or only in cases in which an affected licensee has made some threshold showing that the proposed backfit is unwarranted? What is the potential impact on the ability of the NRC staff to carry out its safety mission of imposing on the staff the requirement to prepare evaluations for some or all backfitting proposals?

c. How should the standard for making backfitting decisions address the comparison of what may be more qualitative estimates of the expected safety benefit to be derived from a proposed backfit and more quantitative estimates of the expected cost of complying with the proposed requirement? Should there be a presumption in favor of the safety benefit, as the Kemeny Commission recommended, and if not, why not?

d. How substantial a showing should be required to justify the imposition of a proposed backfit? To what extent should probabilistic risk analysis

methods be used for this purpose, if at all?

c. There is a substantial difference in the amount and detail of information, and consequently in the degree of finality in the NRC's safety judgments, regarding a power reactor at the construction permit stage and at the operating license stage. Section 50.35(c) of 10 CFR Part 50 states that the issuance of a construction permit does not constitute Commission approval of a design feature. Given this difference, is it appropriate to develop a standard for making backfitting decisions for power reactors that have not yet received an operating license? If so, how should that standard differ from the standard that should apply to backfitting decisions for operating reactors?

3. What administrative process should be used within the NRC for making decisions on whether to impose a proposed backfit? At what level within the agency should these decisions initially be made, and what opportunities for formal or informal appeal should be provided? Should this decisionmaking process be addressed in a proposed backfitting rule?

4. Once a decision is made to impose a proposed backfit, how should that change be implemented on a plant-by-plant basis? How, if at all, should the schedule for implementation of individual backfitting decisions be integrated for a particular power reactor? How, if at all, should the safety interrelationships of approved generic backfits be evaluated as part of the implementation process at individual reactors? To what extent, if at all, should these aspects of the implementation process be addressed in a proposed backfitting rule?

5. The current NRC approach to imposing a new requirement generally involves the separate examination of discrete safety issues rather than an integrated examination of many or all outstanding issues. This approach can lead to overlapping requirements, or to the imposition of some backfits that ultimately may prove to be unnecessary in light of subsequent changes made in response to other safety issues. Should a proposed backfitting rule permit, encourage or require an integrated approach, either on a plant-by-plant basis or for a class of plants, to developing new requirements needed to address all existing safety issues, including the Unresolved Safety Issues (USIs) and severe accident considerations? Would such an approach be feasible and, if implemented, justify a higher threshold for the imposition of any further new requirements for the plants involved than would otherwise be justified?

6. To what extent should the Commission favor a uniform approach in imposing backfits to promote uniform design, procedures, and training, as opposed to allowing the objectives of a backfit to be met in a variety of ways?

7. For plants under construction, should backfitting be defined to consist of any change in staff requirements that go beyond the requirements of the current Standard Review Plan together with such modification as the staff feels is justified?

Separate Views of Commissioner Roberts

I do believe that this advance notice of proposed rulemaking represents a sincere effort by the Commission to achieve an improved and functional set of regulations and procedures to manage the "backfitting" process. Rather, in this step, the majority has displayed its intention to delay implementation of meaningful steps which would ensure that backfits are required only when they are necessary and when they would result in substantial additional safety. Furthermore, I disagree with the majority view that the separately published Policy Statement on Backfitting provides for an effective interim management of backfits. The two steps taken to date by the Commission, i.e., the establishment of the CRGR and the June 22, 1983 Commission directions to the Staff are insufficient. The CRGR applies only to generic requirements and the June 22, 1983 guidance applies only to licensed commercial reactors. The failure to have an effective framework in effect has been cited by regulators and the industry as a major source of uncertainty and instability.

A review of recent rulemaking efforts would demonstrate that the process is a particularly lengthy one when publication of an advance notice is involved. Recent cases show that, in fact, an average duration between advance notice and proposed rule publication is well over two years. The Commission has already been provided with sufficient comments, information, and alternatives to proceed directly with a proposed rule on backfitting. The Regulatory Reform Task Force, the Ad Hoc Committee for Review of Nuclear Reactor Reform, the Atomic Industrial Forum, the Senior Advisory Group, numerous licensees, and others have provided valuable input and proposals. It is now time for action.

In short, the NRC is already capable of answering the questions posed in this Advanced Notice of Rulemaking. Even if some require further reflection on these questions, this would not preclude the ability of the Commission to go forward with proposed rulemaking.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation Protection, Reactor Siting Criteria, Reporting and recordkeeping requirements.

The authority citation for this document is: Sec. 161, Pub. L. 83-703, 68 Stat. 948, as amended (42 U.S.C. 2201).

Dated at Washington, D.C. this 22nd day of September, 1983.

For the Nuclear Regulatory Commission.

John C. Hoyle,

Acting Secretary.

48 FR 45787

Published 10/7/83

10 CFR Part 50

Revision of Backfitting Process for Power Reactors; Correction

AGENCY: Nuclear Regulatory Commission.

ACTION: Correction to advance notice of proposed rulemaking.

SUMMARY: The Nuclear Regulatory Commission is initiating a rulemaking for the purpose of establishing requirements for the long-term management of its process for the imposition of new regulatory requirements for power reactors. This process, commonly referred to as "backfitting", can include both plant specific changes and generic changes that are proposed to be applied to one or more classes of power reactors.

FOR FURTHER INFORMATION CONTACT: William M. Shields, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: 301-492-8693.

The Federal Register dated Wednesday, September 28, 1983, page 44218, Column 3, under the subheading: Separate Views of Commissioner Roberts, Sentence 1, should read as follows: "I do not believe that this advance notice * * * process."

Dated at Washington, D.C. this 4th day of October, 1983.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

≫48 FR 50746
Published 11/3/83
Comments should be filed with the Commission's Secretary not later than 12/6/83

10 CFR Parts 50 and 51

Reopening of Comment Period on Limited Proposed Rule

AGENCY: Nuclear Regulatory Commission.

ACTION: Reopening of comment period.

SUMMARY: In response to public comments, the Commission has decided to reopen the comment period on its fourth finding in its Waste Confidence decision and on an associated proposed amendment to 10 CFR Parts 50 and 51. The fourth finding states:

"The Commission finds reasonable assurance that, if necessary, spent fuel can be stored safely and without significant environmental effects for at least 30 years beyond the expiration of reactor operating licenses at reactor spent fuel storage basins, or at either onsite or offsite independent spent fuel storage installations."

This finding was based in part on the Commission's determination that there are no significant non-radiological consequences which could adversely affect the environment if spent fuel is stored beyond the expiration of operating power reactor licenses. Radiological consequences were addressed more specifically in other findings.

Comments are to be limited to 20 pages and are to address only the significance of environmental impacts of extended spent fuel storage, since safety matters in the Commission's decision have already been commented on by participants in this proceeding.

DATES: Comments should be filed with the Commission's Secretary not later than December 6, 1983. Comment received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received before this date.

ADDRESSES: Send comments to:

Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attn: Docketing and Service Branch

Hand-deliver comment to: Room 1121, 1717 H Street NW., Washington, DC, between 8:15 a.m. and 5:00 p.m.

Examine comments received at: the NRC Public Document Room 1717 H Street NW., Washington, DC

FOR FURTHER INFORMATION CONTACT:

Dennis Rathbun or Clyde Jupiter, Office of Policy Evaluation, U.S. Nuclear Regulatory Commission, Washington, DC 20555, (202) 634–3295

Sheldon L. Trubatch, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC, (202) 634–3224

SUPPLEMENTARY INFORMATION: Since October 1979 the Nuclear Regulatory Commission ("NRC" or "Commission") has been conducting a generic rulemaking proceeding known as the "Waste Confidence" proceeding (44 FR 61372, October 25, 1979). On May 16, 1983 the Commission issued a proposed decision in that proceeding. The Commission made five findings on the feasibility of disposal of high-level radioactive waste and spent fuel, the timeliness of availability of disposal capacity and the safety and environmental impacts of the storage of spent fuel for up to thirty years after the expiration of reactor operating licenses. The Commission's request for comments by participants was limited to two issues: (1) Implications of the Nuclear Waste Policy Act of 1982 for the Commission's decision, and (2) the Commission's discussion of the safety of dry storage of spent nuclear fuel.

In a companion action, on May 20, 1983, 48 FR 22730, the Commission proposed an amendment to its NEPA rules in the 10 CFR Part 51 rule regarding the consideration of environmental impacts of the extended storage of spent fuel beyond the licensed operating period of a nuclear power reactor or independent spent fuel storage installation. The Commission found that extended storage for up to thirty years after the expiration of operating licenses at nuclear power plants or at independent spent fuel storage installations will result in no significant safety or environmental impacts. This finding was based on the record of the Waste Confidence proceeding and the NRC's experience with more than eighty individual safety and environmental evaluations conducted in storage licensing proceedings.

In particular, the Commission found that significant release of radioactivity from spent fuel under licensed storage conditions is highly unlikely because of the resistance of spent fuel cladding to corrosive mechanisms, the benign character of the storage system, the ease of maintenance and the absence of conditions that would provide a driving force for disposal of radioactive material. The Commission also found that the non-radiological environmental impacts from spent fuel storage are insignificant. With the possible exception of impacts associated with the site preparation and storage facility construction there are no other significant non-radiological consequences which could adversely affect the environment as a result of storage past the expiration of operating licenses at reactors or at independent spent fuel storage installations.

Some participants in the Waste Confidence proceeding commented that there had been no notice of the Commission's intent to make this environmental finding. Because that finding supports the proposed amendment to Part 51 of the Commission's rules, some of those who commented on the proposed rule contended that they had an inadequate opportunity to comment on the basis of the proposed rule.

The Commission has decided to provide the public an opportunity to comment on: (1) The environmental aspects of its fourth finding—that it has reasonable assurance that, if necessary, spent fuel can be stored without significant environmental effects for at least 30 years beyond the expiration of reactor operaitng licenses at reactor spent fuel storage basins, or at either onsite or offsite independent spent fuel storage installations; (2) the detemrination that there are no significant non-radiological consequences which could adversely affect the environment if spent fuel is stored beyond the expiration of operating licenses either at reactors or at independent spent fuel storage installations; and (3) implications of comments on items (1) and (2) above for the proposed amendment to 10 CFR Part 51.

Comments on the Commission's finding and supporting determination should include a detailed discussion of any environmental impacts associated with the extended storage of spent fuel and should explain how, in the commenter's view, consideration of those impacts should modify the Commission's decision.

Dated at Washington, DC, this 31st day of October 1983.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

➤ 49 FR 4498
Published 2/7/84
Comment period expires 5/7/84. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.
➤ 49 FR 6500
Published 2/22/84
Correction notice
10 CFR Part 50

Analysis of Potential Pressurized Thermal Shock Events

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is proposing to amend its regulations for light water nuclear power plants to: (1) Establish a screening criterion related to the fracture resistance of pressurized water reactor (PWR) vessels during pressurized thermal shock (PTS) events; (2) require analyses and schedule for implementation of flux reduction programs that are reasonably practicable to avoid exceeding the screening criterion; and (3) require detailed safety evaluations to be performed before plant operation beyond the screening criterion will be considered. The proposed changes are intended, if adopted, to produce an improvement in the safety of PWR vessels by identifying those corrective actions that may be required to prevent or mitigate potential PTS events.

DATE: Comment period expires May 7, 1984. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Send comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Services Branch. Copies of comments received may be examined at the Commission's Public Document Room at 1717 H Street NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Roy Woods, Division of Safety Technology, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492–4714.

SUPPLEMENTARY INFORMATION: Transients and accidents can be postulated to occur in pressurized water reactors (PWRs) that result in severe overcooling (thermal shock) of the reactor vessel, concurrent with high pressure. In these pressurized thermal shock (PTS) events, rapid cooling of the reactor vessel internal surface causes a temperature distribution across the reactor vessel wall. This temperature distribution produces a thermal stress on the reactor vessel with a maximum tensile stress at the inside surface of the vessel. The magnitude of the thermal stress varies with the rate of change of temperature, and with time during the transient, and its effect is compounded by coincident pressure stresses.

Severe reactor system overcooling events with pressurization of the reactor vessel (PTS events) are postulated to result from a variety of causes. These include system transients, some of which are initiated by instrumentation and control system malfunctions (including stuck open valves in either the primary or secondary system), and postulated accidents such as small break loss-of-coolant accidents, main steam line breaks, and feedwater line breaks.

As long as the fracture resistance of the reactor vessel material is relatively high, these events are not expected to cause vessel failure. However, the fracture resistance of the reactor vessel material decreases with the intergrated exposure to fast neutrons during the life of a nuclear power plant. The rate of decrease is dependent on the chemical composition of the vessel wall and weld materials. If the fracture resistance of the vessel has been reduced sufficiently by neutron irradiation, severe PTS events could cause small flaws that might exist near the inner surface to propagate into the vessel wall. The assumed initial flaw might be enlarged into a crack through the vessel wall of sufficient extent to threaten vessel integrity and, therefore, core cooling capability.

The toughness state of reactor vessel materials can be characterized by a "reference temperature for nil ductility transition" (RT_{NDT}). At normal operating temperatures, vessel materials are quite tough and resistant to crack propagation. As the temperature decreases, the metal gradually loses toughness over a temperature range of about 100°F. RT_{NDT} is a measure of where this toughness transition occurs. Its value depends on the specific material in the vessel wall and the integrated neutron irradiation received by the vessel. These effects are determined by destructive tests of material specimens. Correlations, based on tests of irradiated specimens, have been developed to calculate the shift in RT_{NDT} as a function of neutron fluence for various material compositions. The value of RT_{NDT} at a given time in a vessel's life is used in fracture mechanics calculations to determine whether assumed pre-existing flaws would propagate as cracks when the vessel is subjected to overcooling events.

The PTS issue is a concern only for PWR's. Boiling water reactors (BWR's) operate with a large portion of water inventory inside the pressure vessel at saturated conditions. Any sudden cooling will condense steam and result in a pressure decrease. Simultaneous conditions of high pressure and low temperature are considered to be improbable. Most BWR's also receive lower integrated fast neutron flux at the vessel inner wall, resulting in smaller RT_{NDT} shifts. BWRs are designed with a thinner-walled vessel, resulting in lower thermal stress intensities for postulated cracks.

On the basis of generic studies of severe overcooling events that have occurred, calculations of postulated PTS events that could occur, and vessel integrity calculations, the NRC staff has concluded that a value of RT_{NDT}[1] can be selected so that the risk from PTS events for reactor vessels with smaller RT_{NDT} values is acceptable. (The risk for vessels with higher values of RT_{NDT} might also be shown to be acceptable, but the demonstration would require detailed plant-specific evaluations and possibly modifications to existing equipment, systems, and procedures.) The staff recommended that a value for RT_{NDT} be established as a screening criterion that would determine the need for, and timing of, further plant-specific evaluations.

A detailed report presenting the bases for the staff's conclusions and recommendations was submitted to the Commission on November 23, 1982 (SECY–82–465).[2] After public meetings on December 1 and December 9, 1982, the Commission directed the staff to develop a Notice of Proposed Rulemaking that would: (1) Establish an RT_{NDT} screening criterion; (2) require licensees to submit present and projected vaues of RT_{NDT}; (3) require early analysis and implementation of such flux reduction programs as are reasonably practicable to avoid reaching the screening criterion; and (4) require plant-specific PTS safety analyses before a plant is within 3 calendar years of reaching the screening criterion, including analyses of alternatives to minimize the PTS problem.

The staff approach to selection of the RT_{NDT} screening criterion is described in

[1] RT_{NDT} decreases with depth from the inside surface of an irradiated vessel's wall. This decrease is accounted for in vessel integrity analyses. As used in this document and in the screening criteria, RT_{NDT} is the peak value at the inside surface of the vessel.

[2] Copies of this document are available for public inspection and copying at the Public Document Room at 1717 H Street, NW, Washington, DC 20555.

detail in SECY–82–465. In summary, the approach was to use a deterministic fracture mechanics algorithm to calculate the value of RT_{NDT} for which assumed pre-existing flaws in the reactor vessel would be predicted to initiate (grow deeper into the vessel wall) assuming occurrence of one of the severe overcooling events that have been experienced in U.S. PWR's. These "critical"valuesof RT_{NDT} were related to the expected frequency of the experienced severe overcooling events based on a limited data base, consisting of eight events in 350 reactor-years.

In addition, the staff considered a wide spectrum of postulated overcooling events that could occur. These events were grouped into categories, estimates were made of their expected frequency, and stylized characterizations of the temperature and pressure time-histories were developed for each event category. The estimates presented in detail in SECY–82–465[1] are based on a generic study of Westinghouse-designed PWR systems, and are considered also to be generally representative of PWR systems, designed by Combustion Engineering. Because there are some significant differences between those designs and PWRs designed by Babcock & Wilcox that affect the characteristics and estimated frequencies of PTS events, information was also developed for the Babcock & Wilcox designs. This information is described in detail in Enclosure C to SECY–83–288 (July 15, 1983)[2]. A probabilistic treatment of the fracture mechanics calculations was developed to gain insight into the sensitivity of the fracture mechanics calculations to uncertainties in the various input parameters. By combining the estimated frequencies of postulated events with the probabilistic fracture mechanics results, some estimates of the probability of vessel failure resulting from PTS events were developed. These estimates were used by the staff to better understand the residual risks inherent in the use of the screening criterion approach for further evaluations and resolution of the PTS issue.

On the basis of these studies, the NRC staff concluded that PWR reactor pressure vessels with conservatively calculated values of RT_{NDT} less than 270°F for plate material and axial welds, and less than 300°F for circumferential welds, present an acceptably low risk of vessel failure from PTS events. These values were chosen as the screening criterion in the proposed new § 50.61 of 10 CFR Part 50. The conservative method chosen by the staff for the calculation of the RT_{NDT} for the purpose of comparison with the screening criterion is presented in paragraph (b)(2) of the proposed § 50.61. The bases for selection of this method are presented in Appendix E of Enclosure A to SECY 82–465[2]. Since the acceptability of the screening criterion was based on generic studies, and since the purpose of the criterion is to provide a defined and consistent threshold for initiating the submittal of plant-specific analyses, the proposed rule requires each licensee to assess the current and projected values of RT_{NDT} using the methodology described in paragraph (b)(2) of the rule. The Commission recognizes that alternative methods of determining RT_{NDT} may be justified for use in plant-specific evaluations of PTS events in the future.

Applicants for operating licenses would also be required to provide projected values of RT_{NDT} as part of the final safety analysis report as provided in this proposed amendment to paragraph (b) of § 50.34, "Contents of Applications: Technical Information."

On the basis of information currently available, it appears that the RT_{NDT} of reactor vessels for some plants will remain below the screening criterion throughout the service life. For many other reactor vessels, fuel management programs could be instituted that would result in core configurations reducing neutron flux at critical locations, thereby slowing the increase of RT_{NDT} so that the screening criterion would not be exceeded. The Commission recognizes that further refinements in materials information, analyses of PTS event frequencies and scenarios, and plant-specific analyses of alternative measures to reduce PTS risk may provide a basis for the acceptability of continued operation with RT_{NDT} values in excess of the screening criteron. The preparation and review of such analyses and determination of their acceptability will require substantial time. However, the effectiveness of flux reduction programs depends on early implementation. The Commission has determined that reasonably practicable flux reduction programs should be implemented promptly to maintain reactor vessel RT_{NDT} below the screening criterion, without awaiting possible plant-specific determinations that higher values of RT_{NDT} are acceptable. Therefore, the proposed rule requires licensees with pressure vessels for which the reference temperature is projected to exceed the screening criterion before the expiration date of the operating license to submit an analysis of such flux reduction programs as are reasonably practicable to avoid exceeding the screening criterion, and a schedule for implementation of such programs. The NRC staff will review these submittals to confirm that reasonably practicable programs have been, or will be, implemented. The Commission expects that each licensee's analysis will include consideration of the possibility that, in the future, the licensee may wish to seek approval of a license amendment to extend the expiration date of the license. Since consideration of protection against PTS events would be a factor in the Commission's decision on such a request, licensees should consider flux reduction programs that would prevent reaching the screening criterion by the end of the anticipated service life of the facility. At the time of this submittal, or at a later time, licensees may submit additional plant-specific analyses to justify (by new information, improved analyses or evaluations of alternative measures) operation with less restrictive flux reduction programs in the future. It is the Commission's intent that the effectiveness of flux reduction programs that are needed to avoid, or to delay, reaching the screening criterion, and that are reasonably practicable, should not be reduced by delay in implementation, pending review of these analyses. Accordingly, the Commission also directed the staff to meet with licensees of plants for which a flux reduction factor of greater than two is required to avoid exceeding the screening criterion before end of licensed plant life. These meetings have already been held for the purpose of determining what plans these licensees have to implement flux reduction options before the PTS rule is in effect, and to encourage prompt implementation of reasonably practicable options. Results of those meetings were reported on February 25, 1983 in SECY–83–79[3] and an October 28, 1983 in SECY–83–443.[4]

When a licensee determines, and the Commission agrees, that reasonably practicable flux reduction measures have been or will be implemented, and that the vessel RT_{NDT} is still projected to exceed the screening criterion before expiration of the operating license, then the proposed rule requires the submittal of a plant-specific safety analysis. The analysis would include an assessment of the vessel fracture mechanics properties for the remainder of vessel life, including effects on PTS risk of possible changes in fuel loading patterns affecting the neutron flux at the vessel wall.

The plant-specific PTS analysis would include a quantitative assessment of the PTS risk due to operation of the particular plant. It would identify potential event sequences that contribute significantly to PTS risk. It would consider both the expected frequency of these event sequences and the conditional probability of vessel failure and subsequent core melt, given

the occurrence of these event sequences, and identify what, if any, modifications to equipment, systems and operation are necessary to prevent potential failure of the reactor vessel as a result of postulated PTS events, if continued operation beyond the screening criterion is allowed. Modifications to equipment or systems are preferable to reliance on procedure modifications. Finally, the analyses would estimate the effects of recommended corrective actions on PTS risk and would justify, partly on the basis of risk analysis, operation at RT_{NDT} values above the screening criterion after completion of corrective or mitigative actions.

The plant-specific analyses should be submitted substantially in advance of the projected time at which the screening criterion would be exceeded, to allow time for Commission review of the analyses and licensee implementation of any proposed modifications well in advance of reaching the screening criterion. It is the Commission's intent that the staff perform a timely review of these analyses so that decisions regarding any necessary corrective actions are made with allowance for sufficient time to implement corrective actions before the screening criterion is exceeded. The staff is developing additional guidance on the content of a plant-specific analysis and on the acceptance criteria the staff will use in reviewing the analysis. The staff expects this guidance to be available well before any licensee would be required to start such an analysis (based on estimated rates of RT_{NDT} increase and recent information regarding the efficacy of flux reduction techniques planned at several plants with high RT_{NDT} values). No plant-specific analyses, which might be required when this rule is finalized, should be started before issuance of this additional staff guidance.

The proposed rule would require submittal of the plant-specific analysis at least three years before the screening criterion would be exceeded. Earlier submittal would allow more time for implementation of any identified corrective actions. The Commission would like to receive comments on whether the rule should require plant-specific PTS analyses within five calendar years of reaching the screening criterion.

Paragraph (b)(6) of the proposed § 50.61 provides that if the Commission concludes that the plant-specific analysis, including any plant modifications proposed therein, does not provide a basis for approval of operation at values of RT_{NDT} in excess of the PTS screening criterion for a given facility, then that facility may not be operated beyond the criterion unless the licensee requests and receives Commission approval based on additional modifications that would reduce the potential for failure of the reactor vessel due to PTS events.

The Commission would like to receive public comment on the merits of eliminating the thermal annealing requirements of 10 CFR Part 50, Appendix G (Fracture Toughness Requirements), paragraph IV.B. Nothing undermines respect for the Commission's rules so much as promulgation of requirements which cannot be met and from which licensees are subsequently exempted. The Commission is concerned that that is what it is dealing with in this case. Thermal annealing has never been attempted on a commercial reactor, let alone shown to be practical. The best that can be done at this point is to give licensees, so long as they can demonstrate the proper safety margins, the latitude to select the most practical method for accomplishing the desired results, whether that be by thermal annealing, more restrictive operating curves, or early decommissioning.

Commissioners Asselstine and Gilinsky add that: "With regard to the acceptance criteria and PTS analyses, a staff contractor report ('PNL Technical Review of Pressurized Thermal Shock Issues' NUREG/CR-2837, Supplement 1, May 1983) [3] states: 'It seems evident that the unknowns are so widespread that it would be unwise to reduce specific conservatisms until the unknowns are further resolved.' That report tabulates numerous conservative factors, unconservative factors and 'unknown factors' in the PTS analyses. We believe that such factors as those identified in that contractor report need to be considered appropriately in the acceptance criteria being developed by the staff and that a suitable margin of safety be retained throughout the service life of the facility."

Commissioner Roberts believes that the rule should also allow licensees to provide for staff consideration, analysis of alternative measures to flux reduction which will demonstrate that timely and adequate action will be taken to protect the reactor vessel from pressurized thermal shock events.

Regulatory Flexibility Act Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this proposed rule, if promulgated, will not have a significant economic impact on a substantial number of small entities. This proposed rule specifies minimum fracture toughness properties of irradiated pressure vessel materials to ameliorate the effects of PTS events on nuclear facilities licensed under the provisions of 10 CFR 50.21(b) and 10 CFR 50.22. The companies that own these facilities do not fall within the scope of "small entities" as set forth in the Regulatory Flexibility Act or the small business size standards set forth in regulations issued by the Small Business Administration in 13 CFR Part 121.

Paperwork Reduction Act Statement

This proposed rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). This rule has been submitted to the Office of Management and Budget for review and approval of the paperwork requirements.

Environmental Impact Statement

The promulgation of this proposed rule would not result in any activity that significantly affects the environment. Accordingly, the Commission has determined that under the National Environmental Policy Act, and the criteria of 10 CFR Part 51, neither an environmental impact statement nor an environmental impact appraisal to support a negative declaration for the proposed rule is required.

Regulatory Analysis

The Commission has prepared a regulatory analysis for this regulation. The analysis examines the costs and benefits of the rule as considered by the Commission. A copy of the regulatory analysis is available for inspection and copying for a fee at the NRC Public Document Room, 1717 H Street, NW, Washington, DC 20555. Single copies of the analysis may be obtained from Mr. Karl Kniel, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone (301) 492-7359.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by references, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is proposing to adopt the following amendments to 10 CFR Part 50.

[3] Copies of this document are available for public inspection and copying at the Public Document Room at 1717 H Street, NW, Washington, DC 20555. Copies may also be purchased from the National Technical Information Service, Springfield, VA 22161.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 continues to read as follows:

Authority: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, 202, 206, 88 Stat. 1242, 1244, 1246, as amended (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Section 50.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 50.57(d), 50.58, 50.91, and 50.92 also issued under Pub. L. 97-415, 96 Stat. 2071, 2073 (42 U.S.C. 2133, 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80-50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Sections 50.100-50.102 also issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10 (a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10 (b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, 50.73, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. Section § 50.34(b) is amended by adding a new paragraph (9) to read as follows:

§ 50.34 Contents of applications; technical information.

• • • • •

(b) • • •

(9) A description of protection provided against pressurized thermal shock events, including projected values of the reference temperature for reactor vessel beltline materials as defined in paragraphs (b)(1) and (b)(2) of § 50.61 of this part.

• • • • •

3. A new § 50.61 is added to read as follows:

§ 50.61 Fracture toughness requirements for protection against pressurized thermal shock events.

(a) *Definitions.* For the purposes of this section:

"ASME Code" means the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section III, "Rules for the Construction of Nuclear Power Plant Components," edition and addenda as specified by § 50.55a, Codes and Standards.

"Pressurized Thermal Shock Event" means an event or transient in pressurized water reactors (PWR's) causing severe overcooling (thermal shock) concurrent with or followed by significant pressure in the reactor vessel.

"Reactor Vessel Beltline" means the region of the reactor vessel (shell material including welds, heat affected zones, and plates or forgings) that directly surrounds the effective height of the active core and adjacent regions of the reactor vessel that are predicted to experience sufficient neutron radiation damage to be considered in the selection of the most limiting material with regard to radiation damage.

"RT_{NDT}" means the reference temperature for a reactor vessel as defined in the ASME Code, Paragraph NB-2331, adjusted for the effects of neutron radiation for the period of service in question, calculated by the method given in paragraph (b)(2) of this section.

(b) *Requirements.* (1) For each pressurized water nuclear power reactor for which an operating license has been issued, the licensee shall submit projected values of RT_{NDT} (at the inner vessel surface) of reactor vessel beltline materials giving values from the time of submittal to the expiration date of the operating license. The assessment must specify the bases for the projection, including the assumptions regarding core loading patterns. This assessment must be submitted by *(6 months after the effective date of this section),* and must be updated whenever changes in core loadings, surveillance measurements, or other information indicate a significant change in projected values.

(2) A pressurized thermal shock (PTS) screening criterion is hereby established of 270° F for plates, forgings, and axial weld materials, or 300° F for circumferential weld materials. For the purpose of comparison with this criterion, the value of RT_{NDT} for the reactor vessel must be calculated as follows: The calculation must be made for each weld and plate, or forging, in the reactor vessel beltline. For each material, RT_{NDT} is the lower of the results given by Equations 1 and 2.

Equation 1:

$$RT_{NDT} = I + M + [-10 + 470\,Cu + 350\,Cu\,Ni]\,f^{0.270}$$

Equation 2:

$$RT_{NDT} = I + M + 283\,f^{0.194}$$

"I" means the initial reference temperature of the unirradiated material measured as defined in the ASME Code, Paragraph NB-2331. If a measured value is not available, the following generic mean values must be used: 0° F for welds made with Linde 80 flux, and −56° F for welds made with Linde 0091, 1092 and 124 and ARCOS B-5 weld fluxes.

"M" means the margin to be added. In Equation 1, M=48° F if a measured value of I was used, and M=59° F if the generic mean value of I was used. In Equation 2, M=0° F if a measured value of I was used, and M=34° F if the generic mean value of I was used.

"Cu" and "Ni" mean the weight percent of copper and nickel in the material. The source of these values must be reported. The relationship of the material on which any measurements were made to the actual material in the pressure vessel must be described.

"f" means the maximum neutron fluence, in units of 10^{19} n/cm² (E greater than or equal to 1MeV), at the clad-base-metal interface on the inside surface of the vessel at the location where the material in question receives the highest fluence for the period of service in question.

(3) For each pressurized water nuclear power reactor for which the value of RT_{NDT} is projected to exceed the PTS screening criterion before the expiration date of the operating license, the licensee shall submit by *(9 months after the effective date of this section)* an analysis and schedule for implementation of such flux reduction programs as are reasonably practicable to avoid exceeding the PTS screening criterion.

(4) For each pressurized water nuclear power reactor for which the analysis required by paragraph (b)(3) of this section indicates that no reasonably practicable flux reduction program will prevent the value of RT_{NDT} from exceeding the PTS screening criterion before the expiration date of the operating license, the licensee shall submit a safety analysis to determine what, if any, modifications to equipment, systems, and operation are necessary to prevent potential failure of the reactor vessel as a result of postulated PTS events if continued operation beyond the screening criterion is allowed. This analysis must be submitted at least 3 years before the value of RT_{NDT} is projected to exceed the PTS screening criterion or by *(1 year after the effective date of this section),* whichever is later.

(5) After consideration of the licensee's analyses (including effects of proposed corrective actions, if any) submitted in accordance with paragraphs (b)(3) and (b)(4) of this section, the Commission may, on a case-by-case basis, approve operation of the facility at values of RT_{NDT} in excess of the PTS screening criterion. The Commission will consider factors significantly affecting the potential for failure of the reactor vessel in reaching a decision.

(6) If the Commission concludes, pursuant to paragraph (b)(5) of this section, that operation of the facility at values of RT_{NDT} in excess of the PTS screening criterion cannot be approved on the basis of the licensee's analyses submitted in accordance with

paragraphs (b)(3) and (b)(4) of this section, the licensee must request and receive Commission approval prior to any operation beyond the criterion. The request must be based upon modifications to equipment, systems, and operation of the facility in addition to those prevously proposed in the submitted analyses that would reduce the potential for failure of the reactor vessel due to PTS events.

Dated at Washington, DC, this 1st day of February 1984.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

49 FR 14698
Published 4/12/84
Comment period expires 6/11/84.

Request for Public Comment on Regulatory Reform Proposal Concerning the Rules of Practice, Rules for Licensing of Production and Utilization Facilities

See Part 2 Proposed Rule Making

49 FR 24748
Published 6/15/84
Interested parties will have untill 6/28/84 to comment on both the NARUC data and the staff's analysis.

Elimination of Review of Financial Qualifications of Electric Utilities in Operating License Reviews and Hearings for Nuclear Power Plants; Extension of Comment Period

See Part 2 Proposed Rule Making

49 FR 27769
Published 7/6/84

10 CFR Part 50

Limiting the Use of Highly Enriched Uranium in Domestic Research and Test Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Commission is considering amending its regulations to limit the use of highly enriched uranium (HEU) fuel in domestic research and test reactors (non-power nuclear reactors). The proposed amendment generally would require that new non-power nuclear reactors use low enriched uranium (LEU) fuel and that existing reactors replace HEU fuel with LEU fuel when available.

The Commission considers that currently licensed non-power reactors using HEU fuel are operated without undue risk to the health and safety of the public. The proposed rule is

intended to reduce the risk of theft or diversion of HEU fuel used in non-power reactors and the consequences to public health, safety and the environment from such theft or diversion. The reduction in domestic use of HEU fuel may encourage similar action by foreign research reactor operators, and thereby reduce the amount of HEU fuel in international use.

DATE: Comment period expires September 4, 1984. Comments received after this date will be considered if practical to do so, but only those comments received on or before this date can be assured of consideration.

ADDRESSES: Comments should be submitted in writing to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. All comments received will be available for public inspection in the Commission's Public Document Room at 1717 H Street, NW. Washington, DC.

FOR FURTHER INFORMATION CONTACT: William R. Lahs, Jr., Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Telephone (301) 443-7674.

SUPPLEMENTARY INFORMATION:

Background

On August 17, 1982, The Commission issued a Policy Statement on the use of HEU in research reactors. The Policy Statement indicated that NRC has licensing responsibility for domestic use for export abroad of Special Nuclear Material, including HEU, and is interested in reducing, to the maximum extent possible, the use of HEU in domestic and foreign research reactors. The Policy Statement also noted that as part of a policy to encourage conversion by foreign operators, the Commission would take steps to encourage similar action by U.S. research reactors operators.

Public Commission meetings on this subject were held December 19, 1983, January 27 and February 6, 1984. As discussed at the meetings, the Commission believes that the 31 non-power reactors (25 owned by universities, five by private businesses and one by the Government) presently licensed to use HEU fuel are operated without undue risk to the public health and safety. The proceeding is intended only to cause replacement of HEU fuel. (Target material, special instrumentation or experimental devices using HEU, are not included.) This reduction is desirable because HEU, in appropriate form and quantity, can be used to make an explosive device which can have severe adverse consequences on public health, safety and the environment. LEU has relatively little value for this purpose. The Commission believes that a new rule could reduce the risk of theft or diversion of HEU, could encourage similar actions by foreign operators of non-power reactors, and thereby, could reduce the amount of HEU in international use.

The Policy Statement also describes a continuing program to develop and demonstrate the technology that will facilitate the use of reduced enrichment fuels. The Reduced Enrichment for Research and Test Reactors (RERTR) program was initiated by the Department of Energy (DOE) and is managed by the Argonne National Laboratory (ANL). Its objective is to prove the ability of new low-enriched uranium (LEU) fuels to replace existing HEU fuel without significant changes to existing reactor cores or facilities, or significant decrease in performance characteristics of the reactors. The RERTR program's progress and anticipated continued success over the next five years have encouraged NRC to undertake a rulemaking proceeding which would cause reduction in the use of HEU fuel in domestic research and test reactors.

Detailed information on the RERTR program was presented by Dr. A Travelli, ANL, at the International Symposium on the Use and Development of Low and Medium Flux Research Reactors, held October 17–19, 1983, at the Massachusetts Institute of Technology. A copy of Dr. Travelli's paper, "RERTR Program Activities Related to the Development and Applications of New LEU Fuels", is available for public inspection in NRC's Public Document Room at 1717 H Street, NW., Washington, DC.

One source of information which identifies and classifies the affected university reactors and addresses the range of impacts of converting from HEU to LEU is a contractor's report, "Assessment of the Implications of Conversion of University Research and Training Reactors to Low Enrichment Uranium Fuel," NUREG/CR-3666. The report is available for public inspection and copying for a fee in NRC's Public Document Room at 1717 H Street, NW., Washington, DC. As part of the development of the proposed amendment, Commission briefings, open to the public, were held December 19, 1983, and January 27, 1984. At the briefings, information was presented by the DOE, Department of State, Nuclear Engineering Department Heads Organization (NEDHO), NRC staff and other interested persons.

Information considered to date indicates that conversion of several non-power reactors from HEU fuel to LEU fuel is technically feasible and, if the goals of the RERTR program are successfully achieved over the next five years, will be technically feasible for almost all the remaining reactors. The information also shows that a major consideration to operators is the cost of conversion which hinges on the availability of vendor supplied fuel. NRC shares the licensees' expressed view that conversion costs should largely or entire be financed by the Federal Government. Historically, the DOE and its predecessor agencies have provided significant support to research and test reactor programs. The availability of Federal support will be a key factor considered in determining the availability of LEU fuel and schedules for conversion.

Under the proposed rule, non-power reactors woud be required to use LEU fuel unless there is a demonstration that the facility's unique purpose cannot be accomplished without the use of HEU. Licensees now authorized to use HEU fuel would be required to develop and submit to the NRC's Director of the Office of Nuclear Reactor Regulation a proposed schedule for conversion to LEU fuel. In preparing the proposed schedule, account will be taken of factors such as the availability of shipping casks, financial support, and reactor usage. Determination that the conversion fuel is available is dependent upon the successful accomplishment of the tasks set out in DOE's RERTR program and the development of commercially available replacement fuel. A final schedule will then be determined by the Director. This schedule will depend upon the availability of LEU fuel readily adapted to use in the licensee's reactor with minimum modifications or adverse impacts on the licensee's program.

A matter of interest to the Commission in requiring conversion and establishing the schedule will be financial considerations. Interested persons are invited to comment on the extent that they believe the economics of conversion should influence Commission actions. Any economic analysis should include estimates of the aversion of risk to the public health, safety and the environment.

Technically, in its simplest form, conversion from HEU fuel to LEU fuel consists of replacing relatively low density HEU by relatively high density LEU. By using a higher density of uranium in the fuel matrix, it is expected that the same amount of U-235 can be present in a fuel element without changing the external dimensions of the element or significantly changing the thermal-hydraulic characteristics of the reactor. Under these conditions it is possile that existing technical specifications will remain unchanged and no unreviewed safety question will be involved. NRC is evaluating the reactor performance and safety aspects of conversion and expects to publish a report prior to reaching a determination

on issuance of a final rule.

To facilitate conversion safety reviews, the NRC is considering the development of generic envelopes of safety limits for the several types of non-power reactors. An affected licensee would then submit an analysis showing that both the normal operating and postulated accident conditions of the reactor fall within the limits. These safety limits would be used in establishing limiting conditions of operation (such as coolant flow, coolant pressure, reactivity conditions). Current developments by the RERTR program indicate that these limiting conditions of operation with LEU fuel may not differ significantly from limiting conditions of operation now used with HEU fuel; however, a definitive conclusion on this matter, applicable to all the conversion candidates will depend on the continued success of the RERTR program over the next several years. Comments are invited on this approach of using generic envelopes of safety limits and limiting conditions of operation.

In cases where conversion from HEU fuel to LEU fuel would neither conflict with the technical specification incorporated in the license nor involve an unreviewed safety question, the conversion could proceed without amendment of the license. In other cases, a license amendment would be required. In view of the significance of this proposed rule to the national interest, the Commission, when implementing the rule, intends to waive any licensing fees that would normally be assessed for amending licenses issued to production and utilization facilities. Interested persons are invited to comment on the possibility that a license amendment will not be required or that an amendment would not present an unreviewed safety question or a conflict with technical specifications.

In summary, the Commission recognizes that successful implementation of the proposed rule, while maintaining the nuclear research and training capability which these reactors provide, depends on (1) the continued success of the DOE funded RERTR program (2) the development of acceptable, and available, replacement fuel, and (3) the extent of financial and operational support provided to affected licensees by the Federal Government through DOE. The Commission also recognizes that the degree of RERTR program success directly impacts the costs attributed to attendant NRC safety reviews. The Commission therefore, is especially interested in public comments on these aspects of the proposed rule.

National Environmental Policy Act Consideration

The Commission has determined, under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in 10 CFR Part 51, that promulgation of this proposed rule will not have a significant effect on the quality of the human environment and that, therefore, an environmental impact statement is not required. (The environmental assessment and finding of no significant impact on which this determination is based are available for public inspection at the NRC Public Document Room 1717 H Street, NW., Washington, DC.)

Paperwork Reduction Act Statement

The proposed rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). This rule has been submitted to the Office of Management and Budget for review and approval of the paperwork requirements.

Regulatory Analysis

The Commission has prepared a regulatory analysis for the proposed amendment. The analysis examines the costs and benefits of the amendment and the decision criteria considered by the Commission. A copy of the regulatory anaysis is available for inspection and copying for a fee at the NRC Public Document Room, 1717 H Street NW., Washington, DC.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this proposed rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. The proposed regulation affects non-power reactor licensees that own and operate nuclear utilization facilities licensed under section 103 and 104 of the Atomic Energy Act of 1954, as amended. These licensees do not fall within the definition of small businesses set forth in section 3 of the Small Business Act, 15 U.S.C. 632, or within the Small Businesses Size Standards set forth in 13 CFR Part 121.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 533, notice is hereby given that adoption of the following amendment to 10 CFR Part 50 is contemplated.

1. The Authority citation for Part 50 continues to read as follows:

Authority: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, 202, 206, 88 Stat. 1242, 1244, 1246, as amended (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Sec. 50.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Sec. 50.57(d), 50.58, 50.9 and 50.92 also issued under Pub. L. 97–415, 96 Stat. 2071, 2073 (42 U.S.C. 2133, 2239). Sec. 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sec. 50.80–50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Sec. 50.100–50.102 also issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10 (a), (b), and (c) 50.44, 50.46, 50.48, 50.54 and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10 (b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, 50.73, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. A new § 50.64 is added to read as follows:

§ 50.64 Limitations on the use of high enriched uranium in non-power reactors.

(a) *Applicability.* The requirements of this section apply to all nuclear non-power reactors licensed under §§ 50.21(a), 50.21(c), or 50.22 of this part.

(b) *Definitions.* For purposes of this section:

(1) "High enriched uranium" (HEU) fuel means fuel in which the weight percent of U-235 in the uranium is 20% or greater. Target material, special instrumentation or experimental devices using HEU are not included.

(2) "Low enriched Uranium" (LEU) fuel means fuel in which the weight percent of U–235 in the uranium is less that 20%.

(3) "Unique purpose" means that the project or program cannot reasonably be accomplished without the use of HEU fuel, and may include:

(i) A specific experiment or program,

(ii) Reactor physics or reactor development based explicitly on use of HEU fuel.

(iii) Research projects based on the neutron flux levels or spectra only attainable with HEU fuel, or

(iv) A reactor core of special design that could not perform its intended function without using HEU fuel.

(c) *Requirements.* (1) The Commission will not issue a construction permit for a new non-power reactor that would use HEU fuel unless the applicant demonstrates that the proposed reactor will have a unique purpose as defined in paragraph (b)(3) of this section.

(2) Unless the Director of the Office of Nuclear Reactor Regulation has determined, based on a request submitted in accordance with paragraph (d)(1) of this section, that the reactor has a unique purpose, each licensee currently authorized to possess and use HEU fuel in connection with the operation of a non-power reactor shall:

(i) Acquire no additional HEU fuel if LEU fuel acceptable to the Commission for that reactor is available at the time of the proposed acquisition of the HEU fuel by the licensee; and

(ii) Replace all HEU fuel in the licensee's possession with available LEU fuel acceptable to the Commission in accordance with a schedule determined pursuant to paragraph (d)(2) of this section.

(3) If not required by paragraphs (c)(1) and (2) of this section to use LEU fuel, the applicant or licensee must use HEU fuel of enrichment as close to 20% as is available and acceptable to the Commission.

(d) *Implementation.* (1) Any request by a licensee for a determination that a reactor has a unique purpose as defined in paragraph (b)(3), of this section should be submitted with supporting documentation to the Director of the Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555, by [insert a date 6 months after the effective date].

(2) By [insert a date 12 months after the effective date] each non-power reactor licensee authorized to possess and use HEU fuel shall develop and submit to the Director of the Office of Nuclear Reactor Regulation a proposed schedule for meeting the requirements of paragraphs (c) (2) or (3) of this section. The proposed schedule shall be based upon availability of replacement fuel acceptable to the Commission and consideration of other factors such as the availability of shipping casks, financial support, and reactor usage. A final schedule will then be determined by the Director of the Office of Nuclear Reactor Regulation.

(3) If the replacement of HEU fuel with LEU fuel does not change the technical specifications incorporated in the license or involve an unreviewed safety question as defined in § 50.59(a)(2), the holder of a non-power reactor license may replace HEU fuel with LEU fuel without amendment to the license and shall maintain records and furnish reports as defined in § 50.59(b). If replacement of HEU fuel with LEU fuel changes the technical specifications incorporated in the license or involves an unreviewed safety question, the licensee shall file an application for an amendment in accordance with § 50.59(c).

Dated at Washington, DC this 29th day of June 1984.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

➢49 FR 30726
Published 8/1/84
Comment period expires 12/7/84.

10 CFR Parts 50 and 73

Access Authorization Program

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is proposing amendments to its regulations which would require an access authorization program for individuals seeking unescorted access to protected areas and vital islands at nuclear power plants. These amendments represent the culmination of several years of development which included publication of an earlier proposed rule; public hearings; the establishment and recommendations of a Hearing Board, which received additional oral and written communications regarding the proposed rule; and the establishment and recommendations of the NRC Safety/Safeguards Review Committee. Adoption of the proposed amendments, which will affect all nuclear power plant licensees, will result in increased assurance of the trustworthiness of licensee employees and contractor personnel.

DATES: The comment period expires Friday, December 7, 1984. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Interested persons are invited to submit written comments and suggestions on the proposed rule and/or the supporting value/impact analysis to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. Comments may also be delivered to Room 1121, 1717 H Street NW., Washington, DC, between 8:15 a.m. and 5:00 p.m. Single copies of the value/impact analysis may be obtained on request from Kristina Z. Jamgochian, Human Factors and Safeguards Branch, Division of Risk Analysis and Operations, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 443–7687. Single copies of draft guidance material may be obtained from U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Director, Division of Technical Information and Document Control. Copies of the value/impact analysis and of comments received by the Commission may be examined and copied for a fee in the Commission's Public Document Room at 1717 H Street NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Tom R. Allen, Chief, Regulatory Activities Section, or Henry S. Blumenthal III, Division of Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 427–4010; or for information of a legal nature, Robert L. Fonner, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 492–8692.

SUPPLEMENTARY INFORMATION:

Background

On March 17, 1977 (42 FR 14880), the NRC published proposed amendments to its regulations which would establish an access authorization program for individuals who have unescorted access to or control over special nuclear material. Written comments were invited and received. On December 28, 1977 (42 FR 64703), the Commission issued a notice of public hearing on the proposed regulations and subsequently established a Hearing Board to gather additional testimony. A final rule, based upon recommendations of the Hearing Board regarding only fuel cycle facilities and transportation, was published in 10 CFR Parts 11, 50, and 70 on November 21, 1980 (45 FR 76968).

As a result of information gathered at the public hearing and its own examination of the 1977 proposed access authorization program, the Hearing Board made recommendations in its April 1979 report to the Commission concerning future personnel screening requirements applicable to nuclear power reactors ("Authority for Access to or Control Over Special Nuclear Material" (RM50–7). Copies may be obtained from the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555). The Board's recommendations are summarized as follows:

1. That the Commission determine, if it adopts a full-field background investigation program, whether it is required by law to use 10 CFR Part 10 Department of Energy derogatory information criteria. Further legal analysis resulted in the conclusion that the NRC has statutory authority to establish different criteria from those used by the Department of Energy for access authorization (see Commission Decision CLI–80–37, 12 NRC 528, 535 fn 16 (1980)).

2. That the derogatory information criteria contained in 10 CFR 10.11(b)(6), (b)(8), and (b)(9) not be adopted in their present form.

3. That any future access authorization rule for nuclear power reactors not utilize the security background investigation system, criteria, or staffs now existing at the Department of Defense or the Department of Energy.

4. That personnel screening to ensure employee suitability and trustworthiness at nuclear power plants be done by the private sector.

5. That the NRC issue a rule, in lieu of seeking a revised American National Standards Institute Standard N18.17, "Industrial Security for Nuclear Power Plants" (ANSI N18.17), to set specific standards for the conduct of screening programs by licensees and prescribe the minimum components of an investigation process.

6. That the NRC consider conducting National Agency Checks (NACs) on all applicants on a reimbursable basis.

7. That a future screening rule contain:

(a) A requirement for a background investigation of the personal and employment history of the applicant, including any criminal history information;

(b) A requirement for a psychological screening program, which should include as a minimum: a written psychological test, an interview by a psychologist with any applicant indicated by the test to have possible emotional problems, and a system for continued observation by supervisors;

(c) A requirement for an appeal procedure, which could be through an industry management system or to a central NRC office; and

(d) A requirement for protecting information and personal privacy by prescribing specific privacy requirements for all psychological, personal, or derogatory information in an individual's file.

Proposed Amendments

On June 24, 1980, these recommendations were accepted by the Commission and have provided the basis for this proposed personnel Access Authorization Rule. The Commission has also issued a final opinion in the rulemaking proceeding (12 NRC 528 (1980)), adopting the major recommendations of the Hearing Board with respect to nuclear power reactors, with a specific prohibition, however, against the promulgation of a rule that would infringe upon an individual's right of free speech, association, and privacy protected by the First Amendment to the Constitution. The Commission also stated that the record of the decision for this proposed rule will include the Hearing Board's report as it related to power reactors and the record compiled in the hearing on which the Board relied for its recommendation on nuclear

power reactor access authorization.

Consistent with the Hearing Board recommendations and its opinion, the Commission is proposing to amend 10 CFR Parts 50 and 73 to establish new requirements for an access authorization program for those individuals requiring unescorted access to protected areas and vital islands at nuclear power plants and to make minor conforming amendments not previously made. It is anticipated that no occupational exposure will be associated with implementation of this proposed rule. The licensee will be required to submit for Commission approval an Access Authorization Plan describing how the requirements of this rule will be met. These proposed requirements will consist of three major industry-run components: background investigation, psychological assessment and continual behavioral observation programs.

Temporary Workers

The Commission recognizes that temporary workers represent a unique problem in regard to granting and then transferring to other sites their unescorted access authorization. The proposed rule specifies how manufacturers, contractors, or equipment suppliers may obtain unescorted access authorization. Specifically, the licensee may prepare and include a generic plan in the Access Authorization Program Plan which contractors, manufacturers, or suppliers would use to screen and observe their employees. The licensee would still be responsible for granting, denying, or revoking the access authorization to these individuals based on results of the contractors', manufacturers', or suppliers' findings or observations. In addition, the licensee would be responsible for auditing all licensee-accepted contractor, manufacturer, or supplier administered programs to determine compatibility with the requirements of this rule. Alternatively, the licensee may screen and grant unescorted access authorization to employees of manufacturers, contractors, or suppliers directly. Once an employee is granted unescorted access authorization by a licensee, a second or subsequent licensee may then grant unescorted access authorization to this same individual provided that the individual's employment under the Access Authorization Plan has not been interrupted for more than 365 days. This time period is consistent with Department of Defense requirements. The second or subsequent licensee will be required to secure from the original licensee a photograph of the individual along with certification that the individual has been screened and currently holds a valid unescorted access authorization in accordance with the requirements of the proposed rule. Temporary employees, like permanent employees, will be subject to the behavioral observation program. In those cases where an unescorted access authorization is not obtained or granted, the licensee is required to escort the individual as provided in § 73.55.

During cold shutdown or refueling operations, the licensee would not be required to meet the access authorization requirements of the proposed rule for individuals if:

(1) The requirements of § 73.55 remain in force;

(2) Prior to start-up, a thorough visual inspection of the affected protected areas and vital islands is made by licensee personnel who normally work in those areas to identify signs of tampering or sabotage; and

(3) Appropriate safety start-up procedures are followed to assure that all operating and safety systems are functioning normally.

The Commission believes that this procedure will provide adequate protection of the public health and safety and be cost-effective for licensees.

The proposed rule also addresses individuals who have received their unescorted access authorization to protected areas and vital islands prior to the effective date of this rule. These individuals are not required to undergo either a background investigation or psychological assessment, but are subject to the behavioral observation requirements.

Background Investigation

The proposed background investigation requirements establish minimum areas of background investigation which are designed to provide a basis for determining an individual's trustworthiness and reliability. This program would be industry administered. A Regulatory Guide is also being published for public comment which provides guidance on the scope of the background investigation criteria that can be used by the licensee to determine an individual's history of trustworthiness and reliability. This guidance closely parallels the proposed ANSI N18.17 standard, dated December 1980.

For inquiry into an individual's true identity, military history, educational history, and character, the Commission considers that the retrospective period of examination should be sufficient to assure that the investigation is adequate for making the necessary determinations. ANSI N18.17 differentiates between the retrospective background investigative time period required for a protected area authorization and for a vital area authorization. A two-year retrospective background investigation of previous employment, education, credit, and criminal history is recommended for a protected area authorization, while a five-year retrospective investigation of these same types of histories is recommended for a vital area authorization. The Commission is recommending in supporting guidance, for both protected and vital area (vital island) authorization, a five-year retrospective time frame for establishing employment, credit, educational, and criminal histories. This approach is based on the Commission's belief that there would be no significant difference in resource impact to the licensee between the two programs. The Commission has determined, based on informal industry input, that the majority of licensee employees require access to both the protected areas and vital islands of the site. Public comments on this provision are specifically solicited.

The proposed regulation includes information evaluation criteria. These criteria have been developed to serve as a mechanism for the evaluation of collected background history information and are based primarily on an individual's direct actions rather than the individual's ideas, beliefs, reading habits, or social, educational, or political associations. These criteria, however, do not preclude interviews with the individual seeking access authorization that could elicit information concerning intentions, attitudes and beliefs to explain or mitigate derogatory information that may have been developed by the background investigation. Each criterion contains direct safeguards implications which could, if discovered in the individual's background, cause that individual to be considered a potential risk to the public health and safety if authorized unescorted access to a nuclear power reactor's protected areas and vital islands. Under the proposed requirements, licensees will also be responsible for ensuring that individuals granted access to protected areas and vital islands report any information arising later that may have a bearing on their screened status (e.g., a subsequent conviction).

Psychological Assessment

The proposed psychological assessment requirement consists of two basic components: (1) Written personality tests, and (2) a clinical interview by a qualified psychologist or psychiatrist for individuals whose personality test results are either inconclusive or indicate abnormal personality traits. This is consistent with the recommendations of the Hearing Board.

Personality tests are frequently used in employment settings in order to provide information regarding an individual's psychological and interpersonal characteristics. Clinical interviews serve as a means of professionally evaluating the results of the personality tests, gathering further information on an individual's behavioral reliability, and observing a limited sample of the individual's behavior. The proposed rule requires that the clinical interview, when required, be done by a qualified and, if applicable, state-licensed psychologist or psychiatrist. The use of a qualified professional will help assure that an individual is not subject to an arbitrary and capricious decision by a supervisor.

Continual Behavioral Observation Program

Because human behavior is dynamic, a continual behavioral observation program is proposed. As recommended by the Hearing Board and an NRC study, "Behavioral Reliability Program for the Nuclear Industy," NUREG/CR-2076, this program is needed to detect changes in an individual which may occur and be manifested as behavioral changes in job performance, competence, or judgment capabilities. The Commission believes the existence of a continual behavioral observation program would also help deter screened individuals frm engaging in acts of sabotage. The proposed continual behavioral observation program consists of two basic elements. These elements are:

1. The detection by an individual's immediate supervisor of those behavioral patterns which may lead to acts detrimental to the public health and safety in a nuclear power plant operating environment. After detecting such behavior patterns, the individual's immediate supervisor will refer the individual to the individual responsible for administration of the licensee's access authorization program. This person will make an impartial determination whether referral of the individual to competent medical authorities with suspension of the individual's unescorted access authorization is warranted. If a supervisor believes that an individual's actions represent an imminent potential danger to the public health and safety, the supervisor has the authority to immediately suspend the individual's unescorted access authorization on a temporary basis and then refer the individual to the licensee management official responsible for the access authorization program; and

2. The decision by the licensee management on whether to suspend an individual's unescorted access authorization to nuclear power plant protected areas and vital islands. The proposed Regulatory Guide supporting this rulemaking action clearly indicates that this decision may be revised after a consultation between the licensee and a qualified medical person.

The proposed Regulatory Guide recommends and provides guidance for the training of supervisors to detect certain behavioral changes in an individual which could possibly lead to actions detrimental to the public health and safety. This guide also recommends that the licensee establish procedures for making individuals aware of the continual behavioral observation program and the decisioin-making process used for determining an individual's suitability for maintaining unescorted access to protected areas and vital islands.

Review Procedure

The Hearing Board recommended that the rule include an appeal procedure through either an industry management system or a central NRC office. A review of sample labor-management collective bargaining agreements covering workers in nuclear power plants has demonstrated that the grievance procedures contained therein provide an adequate mechanism for review of access authorization denials or revocations. The usual grievance procedure includes notice and an evidentiary hearing before a neutral arbitrator with full exploration of factual issues. The Commission believes such procedures at least meet the minimal requirements of procedural due process and may be used in review of access authorization denials or revocations. As an alternative, however, and for cases where an employee is not covered by a collective bargaining agreement or where the collective bargaining agreement's grievance procedure is inadequate, the licensee shall provide a review procedure that provides notice and a fair evidentiary hearing. The Office of the Executive Legal Director will participate in examining the review procedures submitted in the licensee's Access Authorization Program Plan. Such review procedures are not intended to preempt any Federal or State procedures for the review of allegations of discrimination in employment based upon race, religion, national origin, sex, or age.

Protection of Information

The Hearing Board recommended that the rule contain requirements for protecting information and personal privacy for all recorded psychological, personal or derogatory information on an individual maintained in a file. The Commission agrees that this protection should be given. The Congress of the United States stated in the Privacy Act of 1974 that the right of privacy is a personal and fundamental right protected by the Constitution of the United States. While the Privacy Act does not apply to personal information kept by private parties, the public policy it expresses leads the Commission to conclude that information of a sensitive nature in personal records, resulting from the application of this rule, should be handled with discretion and disseminated to persons, other than the individual involved, or his representative, only if they have a legitimate "need to know" in administering the access authorization program. Because it is impossible to identify in advance who in a licensee's organization will need access to this personal information, the rule is drafted in general terms, stating the principle to be applied rather than detailing procedures. It is anticipated that licensees will develop procedures to provide an appropriate level of privacy protection for the handling, storage, and destruction of personal information.

The Commission believes that the proposed Access Authorization Rule is consistent with the recommendations of the Hearing Board for establishing an access authorization rule based on ANSI N18.17.

Related Actions Aimed at Assuring Individual Fitness for Duty

In a complementary action, the Commission, on August 5, 1982, published for public comment additional measures aimed at assuring individual fitness for duty at nuclear power plants (47 FR 33980). The fitness for duty program would employ similar techniques (e.g., behavioral observation), and is being made the subject of a separate rulemaking action.

Conforming Amendments

The Commission has included in this rulemaking action revisions to 10 CFR 50.34(d). The amended language removes the terminology "industrial sabotage" and substitutes the term "radiological sabotage." This change is necessary because "industrial sabotage" is not defined in 10 CFR Part 73.

The Commission has also included in this rulemaking action revisions to 10 CFR 50.54(p). The amended language allows licensees to propose changes, on a non-fee basis, to guard training and qualification plans that do not decrease the effectiveness of these plans.

Commission Statement on Proposed Rule

An extensive record has been developed on the psychological assessment and behavioral observation elements of this proposed rule. In 1977, the Commission established a Hearing Board to obtain information from the public on these and other aspects of

access authorization. In 1979, that Board recommended, among other things requiring a psychological screening program and a system for continued observation of employees. The Commission, on June 24, 1980, accepted the recommendations of that Board. This proposed rule is the result of that Commission decision. Finally, in a General Accounting Office (GAO) Report entitled "Additional Improvements Needed in Physical Security at Nuclear Powerplants" (GAO/RCED-83-141, July 13, 1983); the GAO stated: "There is strong support among licensees for personal screening programs that include background investigations, psychological testing, and behavioral observation to assess the reliability and trustworthiness of their employees." The GAO report went on to state: "The proposed access authorization rule appears to be adequate for upgrading the trustworthiness of plant employees." (It is clear in this GAO report that the proposed rule being commented upon included requirements for background investigations and continual behavioral observations; it is not clear whether GAO was commenting on requiring psychological testing.

The Commission is not persuaded at this time that the psychological assessment and behavioral observation elements are appropriate requirements for this agency to adopt. However, given the extensive record leading to this proposal, it believes that it is appropriate to expand further the record and to obtain critical public comments on these elements. Comments from individuals working in the nuclear industry on the need for, and appropriateness of, these aspects of the proposed rule would be particularly useful.

Commissioner Roberts' Separate View

I do not approve the psychological assessment and behavioral observation elements of the proposed rule.

Commissioner Gilinsky's Separate View

I am worried that this rule will too easily lend itself to abuse. I have attached the suggested staff guidelines for shift supervisors to illustrate my point. I am concerned that this proposed rule will contribute to the demoralization of nuclear plant staffs at a time when there is a great need to retain experienced personnel.

Draft Regulatory Guide—Standard Format and Contents Guide for Access Authorization Plans for Nuclear Power Plants

Appendix C—Supervisor's Guide To Observing Behavioral Changes

This guide may be used by the supervisor as a resource. Listed are behavioral changes that can be observed in an individual employee and are categorized into three areas: work performance, social interactions, and personal health.

Work Performance

Employee's on-the-job behavior and work habits that directly impact on efficiency and effectiveness of task accomplishment.

1. Has the individual's work *quality* or *quantity* changed?
—Greatly changed speed of working
—Changed level of work involvement

2. Has the employee made more *mistakes* or *bad judgments*?
—Has numerous accidents
—Laughs off errors or reprimands
—Denies mistakes
—Unnecessarily condemns self for mistakes

3. Has the employee's *efficiency* lessened?
—Has trouble arriving at decisions
—Often fails to meet deadlines
—Needs repeated directions for easy tasks

4. Does the individual have more difficulty *concentrating*?
—Forgets important or obvious things
—Acts without thinking
—Daydreams too much
—Doodles excessively
—Repeats same action over and over

5. How much is the worker *absent from the job?*
—Is late or absent especially Monday or Friday
—Often takes off half days
—Leaves work without notice
—Falsifies attendance records
—Takes a lot of sick leave
—Gives improbable excuses for absences

6. Is the employee *absent "on the job"*?
—Wanders around the plant a lot
—Takes excessively long lunches and breaks
—Avoids a part of the plant because of fear
—Gets sick while at work

7. Does the employee adhere to *company policy*?
—Steals or damages property
—Disregards rules
—Bends the rules

8. Have you noticed the individual becoming *overcautious*?
—Overreacts to normal conditions
—Freezes or disappears in an emergency
—Is overly concerned about details/accuracy
—Doublechecks work too much

9. Has the employee become *overzealous*?
—Never takes breaks
—Comes to work early
—Hangs around after shift
—Volunteers for excessive amounts of overtime
—Suddenly exceeds work expectations

10. Does the employee engage in a lot of *risk-taking*?
—Drives recklessly
—Operates equipment carelessly on or off the job
—Shows poor judgment in dangerous physical activities
—Gambles a lot

11. Has the individual's *cooperation* with *co-workers* changed?
—Refuses to share equipment or information
—Refuses to take directions
—Refuses to accept help from others

Social Interactions

Type and quality of employee's relationship with work associates that may impact on team performance.

1. Does the employee appear *less sociable* then before?
—Isolated/withdrawn
—Shallow friendships
—Smiles and talks to self
—Refuses social contacts
—Holds grudges/sulks
—Poor eye contact
—Lacks a sense of humor
—Overly suspicious of others

2. Has the individual become *too sociable?*
—Talks too much with other employees
—Play pranks/jokes
—Monopolizes conversations
—Inappropriate sexual behavior
—Flashes money

3. Are there changes in the employee's choice of *friends?*
—Especially for breaks/lunch or transportation
—Only these younger or easily dominated
—Separate set of friends just for drinking or gambling

4. Are there changes in the way *other workers* react to him/her?
—Ignore or avoid
—Get angry with
—Become condescending
—Complain about
—Mistrust
—Play pranks on
—Joke about

5. Does the employee show more *anger?*
—Impatient
—Overreaction to real or imagined criticism
—Irritable
—Argumentative
—Physicial fights
—Temper outbursts

6. Does the individual *manipulate* others?
—Builds up brownie points
—Brags/exaggerates
—Acts naive or innocent
—Lies
—Shows off
—Borrows money

7. Have you noticed any changes in the employee's *speech behavior?*
—Talks slower/faster
—Talks more/less
—Stammers

8. Has the employee's *speech content* changed?
—Jumps from topic to topic
—Talks about hopeless future
—Preoccupied with suicide, disasters, destruction
—Preoccupied with one topic
—Never chats about family/interests

9. Does the employee have more *complaints* about:
—Physical ailments
—Back pain/muscle aches
—Co-workers or superiors
—Being ignored/left out
—Has stopped complaining
—Family/money problems
—Lack of privileges
—Filling out required forms

Personal Health

Employee's physicial and emotional states that affect work behavior.

1. Does the individual show any signs of *"nerves"* or *emotional upset?*
—Headaches
—Startles easily
—Cries easily
—Shaky voice

2. Does the individual use *alcohol* or *drugs differently*
—Drinks too much
—Alcohol on breath

—Preoccupied with drinking or drugs
—Gulps drinks, especially the first few
—Encourages others to use
—Frequently "on the wagon"

3. Has the individual had unusual *illness?*
—Claims large amounts of dental/medical, emotional benefits
—Slow recovery from illness
—Preoccupied with death or suddenly religious
—Ignores own illness

4. Has the individual's *energy level changed?*
—Yawning
—Fatigue
—Restlessness
—Fidgeting

5. Are you aware of any changes in *daily living routine?* in *work routine?*
—Sleep difficulties
—Change in after-work hobbies, activities
—Change in amount-pattern of eating
—Rigidly follows same pattern without reason

6. Have you noticed any changes in the individual *general appearance?*
—Appears better/more poorly groomed
—Walks differently (slower, stumbles)
—Change in posture

7. Have you noticed any *facial* changes?
—Blushing or paleness
—Red eyes
—Dry mouth (frequently swallowing/lip wetting)
—Dilated pupils
—Puffy face
—Difficulty hearing

8. Have you noticed any changes in the individual's *body* or *limbs?*
—Shaky hands
—Nail Biting
—Weight loss/gain
—Cold, sweaty hands
—Twitching
—Sweating, especially nonseasonal

9. Has the employee had any *gastrointestinal* changes?
—Nausea/vomiting
—Stomach aches/gas
—Frequent trips to the restoom
—Excessive use of antacids, coffee/tea or other liquids, aspirin, cigarettes

10. Does the employee have any *cardiovascular* difficulties?
—Dizziness/fainting
—Breathing irregularities

11. Have you noticed any changes in the employee's *thinking pattern?*
—Sees things that aren't there (hallucinations)
—False beliefs (delusions)
—Bizarre or unusual ideas

Questions for Specific Public Comment

The Commission is particularly interested in receiving public response to the following questions concerning the proposed requirements:

1. To what extent are the proposals contained in the proposed access authorization rules already in place in the commercial power reactor industry? To what extent are psychological assessment and behavioral reliability programs already used by the nuclear industry as part of employee screening programs?

2. What purposes are being served by the use of psychological assessment procedures in the nuclear industry? Is psychological assessment used to address fitness for duty concerns, radiological sabotage concerns, or both?

3. What are the particular concerns about infringements on civil liberties associated with each of the components of the proposed access authorization rule? The Commission is also interested in specific comments regarding the contribution of the specific provisions of the proposed rule in decreasing the risk of sabotage and whether they have been adequately demonstrated to outweigh the infringements on individual privacy associated with the initiatives.

4. What evidence does or does not support the use of objective diagnostic tests such as the MMPI as screening tools when specifically used only to initiate overall clinical assessments? What evidence does or does not support the use of clinical assessment by a licensed psychologist or psychiatrist as a consideration in determining whether or not an individual should be granted unescorted access to commercial nuclear power reactors?

5. What specific characteristics are identified by a clinical psychological assessment that relate directly or indirectly to reducing the risk of radiological sabotage? What percentage of false positives and false negatives (Type I and Type II errors) can be expected from using the NRC proposed psychological assessment procedure? Are more effective procedures available and practical?

6. Can the use of psychological assessment in the commercial nuclear industry be justified solely on the basis of reducing the risk of radiological sabotage? Is there any evidence which would help quantify the extent, if any, of risk reduction supplied by psychological assessment, background investigations, and behavioral reliability programs.

7. Can the use of psychological assessment in the commercial nuclear industry be justified on the basis of addressing both fitness for duty and radiological sabotage concerns?

8. To what extent is the use of psychological assessment related to a behavioral reliability program? Would the proposed behavioral reliability program be effective without preemployment psychological assessment? What specific risks would remain if both psychological assessment and a behavioral reliability program were not part of a screening program, i.e., if only background investigations were adopted?

9. What kinds of individuals have been "screened out" of nuclear industry by the use of psychological assessment, by the use of background investigations, or by the use of behavioral reliability programs?

10. What examples, if any, exist of management abuses of screening procedures, including psychological assessment, background investigations and behavioral reliability programs?

11. How do employees and employee organizations feel about past and present use of screening programs? How do they feel about the proposed access authorization rules?

Environmental Impact: Categorical Exclusion

The NRC has determined that the proposed rule is the type of action descibed in categorical exclusion 10 CFR 51.22(c)(3). Therefore neither an environmental impact statement nor an environment assessment has been prepared for this proposed rule.

Paperwork Reduction Statement

The proposed rule has been submitted to the Office of Management and Budget for clearance of the information collection requirements that may be appropriate under the Paperwork Reduction Act (44 U.S.C. 3501 et seq.). The SF–83, "Request for Clearance," Supporting Statement, and related documentation submitted to OMB will be placed in the NRC Public Document Room at 1717 H Street NW., Washington, DC 20555. The material will be available for inspection or copying.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that these proposed regulations will not, if promulgated, have a significant economic impact on a substantial number of small entities. These proposed regulations affect electric utilities that are dominant in their respective service areas and that own and operate nuclear power plants. These utilities do not fall within the defintion of small businesses set forth in Section 3 of the Small Business Act, 15 U.S.C. 632, or within the Small Business Size Standards set forth in 10 CFR Part 121. These proposed regulations will affect some nuclear power industry contractors and vendors all of which are large concerns which service the industry.

Regulatory Analysis

The net increase initial cost to the NRC due to estimated time to be spent in reviewing proposed Access Authorization Plans is $510K with an estimated annual cost impact of $211K.

The net increase cost per applicant and licensee in implementing these requirements is estimated to be $155K initially and $348K per year thereafter. It is estimated that it will initially cost new plants, which receive their operating license after the effective date of this rule, approximately $770K to

screen their employees with the same annual maintenance cost as existing plants.

List of Subjects

10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting requirements.

10 CFR Part 73

Hazardous materials-transportation, Nuclear materials, Nuclear power plants and reactors, Penalty, Reporting requirements, Security measures.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, notice is hereby given that adoption of the following amendments to 10 CFR Parts 50 and 73 is contemplated.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 is revised to read as follows:

Authority: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, 202, 206, 88, Stat. 1242, 1244, 1246, as amended (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Section 50.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Sections 50.58, 50.91, and 50.92 also issued under Pub. L. 97-415, 96 Stat. 2073 (42 U.S.C. 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80-50.81 also issued under sec. 184, 68 Stat. 930 (42 U.S.C. 2152). Sections 50.80-50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Sections 50.100-50.102 also issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10(a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10(b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. In § 50.34, paragraph (d) is revised and paragraph (h) is added, to read as follows:

§ 50.34 Contents of applications; technical information.

* * * * *

(d) *Safeguards contingency plan.* Each application for a license to operate a production or utilization facility that shall be subject to §§ 73.50, 73.55, or 73.60 of this chapter shall include a licensee safeguards contingency plan in accordance with the criteria set forth in Appendix C to 10 CFR Part 73. The safeguards contingency plan shall include plans for dealing with threats, thefts, and radiological sabotage, as defined in Part 73 of this chapter, relating to the special nuclear material and nuclear facilities licensed under this chapter and in the applicant's possession and control. Each application for such a license shall include the first four categories of information contained in the applicant's safeguards contingency plan. (The first four categories of information, as set forth in Appendix C to 10 CFR Part 73, are Background, Generic Planning Base, Licensee Planning Base, and Responsibility Matrix. The fifth category of information, Procedures, does not have to be submitted for approval.) [1]

* * * * *

(h) *Access Authorization Plan.* Each application for a license to operate a nuclear power reactor pursuant to § 50.22 of this chapter shall include an Access Authorization Plan. The Access Authorization Plan is to provide details for meeting the requirements of § 73.56 of this chapter. The Access Authorization Plan shall describe in detail the program used for: performing a background investigation and psychological assessment on an individual, procedures established for the continual behavioral observation program, grievance review procedures, protection of information, procedures to be used with regard to temporary and transient workers, and the other requirements of § 73.56 of this chapter.

§ 50.54 [Amended]

3. In § 50.54, paragraph (p) is revised to read as follows:

§ 50.54 Conditions of licenses.

* * * * *

(p)(1) The licensee shall prepare and maintain safeguards contingency plan procedures in accordance with Appendix C of 10 CFR Part 73 for effecting the actions and decisions contained in the Responsibility Matrix of the safeguards contingency plan. The licensee may make no change which would decrease the effectiveness of a security plan, guard training and qualification plan or access authorization plan, prepared pursuant to § 50.34(c), 50.34(f) or Part 73 of this chapter, or of the first four categories of information (Background, Generic Planning Base, Licensee Planning Base, Responsibility Matrix) contained in a licensee safeguards contingency plan prepared pursuant to § 50.54(d) or Part 73, as applicable, without prior approval of the Commission. A licensee desiring to make such a change shall submit an application for an amendment to his license pursuant to § 50.90.

(2) The licensee may make changes to plans referenced in paragraph (p)(1) of this section without prior Commission approval if the changes do not decrease the safeguards effectiveness of the plan.

(3) The licensee shall maintain records of changes to the plans made without prior Commission approval for a period of two years from the date of the change, and shall furnish to the Director of Nuclear Material Safety and Safeguards (for enrichment and reprocessing facilities) or the Director of Nuclear Reactor Regulation (for nuclear reactors), U.S. Nuclear Regulatory Commission, Washington, DC 20555, with a copy to the appropriate NRC Regional Office specified in Appendix A of Part 73 of this chapter, a report containing a description of each change within two months after the change is made. Prior to the safeguards contingency plan being put into effect, the licensee shall have:

(i) All safeguards capabilities specified in the safeguards contingency plan available and functional;

(ii) Detailed procedures developed according to Appendix C to Part 73 available at the licensee's site; and

(iii) All appropriate personnel trained to respond to safeguards incidents as outlined in the plan and specified in the detailed Procedures.

(4) The licensee shall provide for the development, revision, implementation, and maintenance of his safeguards contingency plan. To this end, the licensee shall provide for the review at least every 12 months of the safeguards contingency plan by individuals independent of both security program management and personnel who have direct responsibility for implementation of the security program. The review shall include a review and audit of safeguards contingency procedures and practices, an audit of the security system testing and maintenance program, and a test of the safeguards systems along with commitments established for response by local law enforcement authorities. The results of the review and audit, along with recommendations for improvements, shall be documented, reported to the licensee's corporate and plant management, and kept available at the plant for inspection for a period of two years.

* * * * *

PART 73—PHYSICIAL PROTECTION OF PLANTS AND MATERIALS

4. The authority citation for Part 73 is revised to read as follows:

Authority: Secs. 53, 161, 68, Stat. 930, 948, as amended, sec. 147, 94 Stat. 780 (42 U.S.C. 2073, 2167, 2201); sec. 201, 88 Stat. 1242, as amended, sec. 204, 88 Stat. 1245 (42 U.S.C.

[1] A physical security plan that contains all the information required in both § 73.55 and Appendix C to Part 73 satisfies the requirement for a contingency plan.

5841, 5844).

Section 73.37(f) is also issued under sec. 301, Pub. L. 96–295, 94 Stat. 789 (42 U.S.C. 5841 note).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 73.21, 73.37(g), 73.55 are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 72.20, 73.24, 73.25, 73.26, 73.27, 73.37, 73.40, 73.45, 73.46, 73.50, 73.55, 73.67 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 73.2,(c)(1) 73.24(b)(i), 73.26(b)(3), (h)(6), and (k)(4), 73.27(a) and (b), 73.37(f), 73.40(b) and (d) 73.46(g)(6) and (h)(2), 73.50(g)(2), (3)(iii)(B) and (h), 73.55(h)(2), and (4)(iii)(B), 73.70, 73.71, 73.72 are issued under sec. 1080, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

§§ 73.2, 73.4, 73.40, 73.50, 73.55, 73.80 and Appendices A, B, and C [Amended]

5. Remove the authority citation following §§ 73.2, 73.4, 73.40, 73.50, 73.55, 73.80, Appendices, A, B, and C.

6. In § 73.55, the introductory text of paragraph (d) is revised and paragraph (i) is added to read as follows:

§ 73.55 Requirements for physical protection of licensed activities in nuclear power reactors against radiological sabotage.

* * * * *

(d) *Access Requirements.* In addition to the requirements of § 73.56 of this part:

* * * * *

(i) During cold shutdown or refueling operations, as specified in the facility's technical specifications as required in 10 CFR 50.36, the licensee has the option under § 73.56(e)(3) of this Part to grant temporary unescorted access authorizations to unscreened individuals provided that:

(1) Applicable requirements of this section are followed;

(2) Prior to start-up, a thorough visual inspection of all affected protected areas and vital islands is conducted by licensee personnel who normally work in these areas to identify any signs of tampering or sabotage; and

(3) Appropriate safety start-up procedures are followed to assure that all operating and safety systems are functioning normally.

7. A new § 73.56 is added to read as follows:

§ 73.56 Personnel access authorization requirements for nuclear power plants.

(a) *General.* (1) Each licensee who is authorized on [date that a final rule is published in the **Federal Register** to operate a nuclear power reactor under Part 50 § 50.22 of this chapter shall comply with the requirements of this section. The licensee shall submit by [120 days after this effective rule is published in the **Federal Register** as Access Authorization Plan describing how the licensee will comply with all of the requirements of this section. By [360 days after this effective rule is published in the **Federal Register** or 120 days after the Access Authorization Plan has been approved by the Commission, whichever is later, the licensee shall comply with the requirements of this section and with its plan.

(2) Each applicant for a license to operate a nuclear power reactor pursuant to § 50.22 of this chapter, whose application was submitted prior to [date that a final rule is published in the **Federal Register**], shall submit by [120 days after a final rule is published in the **Federal Register**] an Access Authorization Plan describing how the applicant plans to comply with the requirements of this section. By [360 days after a final rule is published in the **Federal Register**, or on the date of receipt of the operating license, whichever is later, the licensee shall comply with the requirements of this section and with its Commission approved plan.

(3) Each applicant for a licensee to operate a nuclear power reactor pursuant to §§ 50.21(b) and 5022 of this chapter, whose application is submitted after [date a final rule is published in the **Federal Register**], shall include in its application an Access Authorization Plan describing how the applicant plans to meet the requirements of this section. The applicant shall comply with the requirements of this section and with its Commission approved plan upon receipt of an operating license.

(4) Licensees may include in their Access Authorization Plan a generic plan to be used by all licensee contractors, manufacturers, or suppliers for screening and observing their employees. The licensee shall be responsible for granting, denying, or revoking unescorted access authorization to these individuals based on results of the contractors', manufacturers', or suppliers' findings or observations.

(b) *General performance objective and requirements.* (1) The licensee shall establish and maintain an access authorization program which has as it objective preventing unescorted access to protected areas and vital islands to those individuals whose history, psychological profile or changes in behavioral patterns indicate a potential for committing acts that are inimical to the public health and safety or prevent a danger to life or property. The unescorted access authorization program shall consist of a background investigation program, a psychological assessment program, and a continual behavioral observation program. The background investigation program shall be designed to identify past actions that would be predictive of an individual's future reliability within a protected area or vital island of a nuclear power reactor. The psychological assessment program shall consist of written personality tests and, if needed, clinical interviews designed to provide personality profiles and to assess psychological abnormalities. The continual behavioral observation program shall be designed to detect certain individual behavior or behavioral changes within the context of the job environment which, if left undetected, could lead to acts inimical to the public health and safety or could present a danger to life or property. This behavioral observation program shall include a supervisor training program and, if needed, a new psychological assessment. Individuals who have received an unescorted access authorization to protected areas and vital islands prior to the effective date of these amendments are exempt from having to meet the requirements of paragraph (c) of this section for a background investigation and paragraph (d) of this section for psychological assessment.

(2) This section does not authorize any activity by the licensee or any other person that would infringe upon the rights of any individual under the First Amendment to the Constitution of the United States, nor any activity that would discriminate among individuals on the basis of race, religion, national origin, sex, or age. Any denial, revocation or suspension of access authorization resulting from information derived from a background investigation and for which this section is cited as authority shall be based solely upon application of the criteria enumerated below.

(3) In making a determination under this section for the denial, revocation or suspension of access authorization based upon data derived from a background investigation, the licensees shall consider whether the individual:

(i) Has committed or attempted to commit, or aided, or abetted another who committed or attempted to commit, any act of sabotage or other unlawful destruction of property;

(ii) Has deliberately omitted material information or falsified his employment or site access application;

(iii) Has or has had any illness of a nature which, in the opinion of a qualified and, if applicable, state-licensed psychologist, or psychiatrist, or medical doctor, may cause significant defect in the judgment or reliability of the individual;

(iv) Has been convicted of a felony or series of lesser offenses indicating habitual criminal tendencies;

(v) Is a habitual user of a controlled substance (as defined and listed in the Comprehensive Drug Abuse Prevention and Control Act of 1970, Pub. L. 91–513, 21 U.S.C. 801 et seq.) without a prescription or has been without adequate evidence of rehabilitation;

(vi) Is a user of alcohol habitually and to excess, or has been so in the past without adequate evidence of rehabilitation; or

(vii) Has engaged in any other conduct, or is subject to any other circumstance, which furnishes reason to believe that the individual may act in a manner contrary to the protection of health and minimization of danger to life and property.

(4) No person may cite this section as authority for the denial, revocation, or suspension of an access authorization based upon information derived from a background investigation when the basis for the denial, revocation, or suspension is other than application of a criterion listed in paragraph (b)(3) of this section.

(c) *Background investigation.* The licensee shall conduct, or make arrangements for, background investigations that provide assurance that individuals seeking unescorted access to protected areas and vital islands at nuclear power reactors are reliable, trustworthy, and would act in a manner that would protect health and minimize danger to life and property. As a minimum, this background investigation must verify an individual's true identity, employment history, educational history, credit history, criminal history, military service and character and reputation. The licensee shall require that individuals granted unescorted access under these provisions report promptly to the licensee any subsequent occurrence or circumstance (conviction, hospitalization, etc.) that may have a bearing on such individual's continued access authorization.

(d) *Psychological Assessment.* The licensee shall establish and maintain a psychological assessment program to be administered to all individuals prior to granting them unescorted access to protected areas and vital islands. The requiremetns of this paragraph supplant the requirements of Appendix B paragraph I.B.2.b. of this part for nuclear power reactor security personnel. This program, as a minimum, shall consist of:

(1) Written personality tests which have been designed to furnish an objective evaluation of some of the major personality traits which influence individual and interpersonal behavior. Results of the personality tests shall be evaluated by a qualified and, if applicable, state-licensed psychologist or psychiatrist. The tests chosen shall have predetermined evaluation scales which are statistically proven to have a high degree of reliability, shall have been proven to be valid, shall meet the criteria of paragraph (d)(2) of this section, and shall comply with the employee selection procedure guidelines as described in "Uniform Guidelines on Employee Selection Procedures (1978)," 43 FR 38295 (August 25, 1978), 29 CFR Part 1607.

(2) Clinical interviews for individuals whose personality tests results are inconclusive or indicate abnormal personality traits. These interviews shall be administered and conducted by a qualified and, if applicable, state-licensed psychologist or psychiatrist. The tests and interview shall be designed to evaluate (i) an individual's current behavioral reliability, looking for traits which would indicate that the individual possesses a strong potential for committing acts detrimental to the public health and safety or property, and (ii) behavioral patterns which, if combined with the expected work environment, could develop into a high potential for committing acts detrimental to the public health, safety, or property. Based on the results of the tests and, if needed, clinical interview, the psychiatrist or psychologist shall provide, in writing to appropriate senior licensee management, a recommendation as to the individual's behavioral suitability for unescorted access to protected areas and vital islands at nuclear power plants.

(e) *Continual Behavioral Observation Program.* (1) The licensee shall establish and maintain a continual behavioral observation program for individuals which is designed to have supervisors detect changes in an individual's on-the-job performance, judgment, level, or behavior and, after detecting a pattern of abnormal behavior, refer the individual to senior licensee management to make an initial decision on whether to maintain or temporarily suspend the individual's unescorted access authorization to protected areas and vital islands. In the case where the individual's behavioral actions represent an imminent danger to the public health and safety, the individual's supervisor shall immediately suspend the individual's unescorted access authorization on a temporary basis and then refer the individual to senior licensee management.

(2) The requirements of paragraphs (d) and (e) of this section supplant the requirements of Appendix B paragraph I.B.2.c. of this part for nuclear power reactor security personnel.

(f) *Non-licensee Employees.* (1) The licensee may accept an unescorted access authorization granted an employee of a manufacturer, contractor, or equipment supplier by another licensee, or a previous employee of another licensee, if the individual's employment in licensed nuclear power reactors has not been interrupted for a continuous period of more than 365 days and if the original granting licensee sends to the gaining licensee a photograph of the individual and a written verification of the individual's unescorted access authorization along with a statement which indicates its current validity. For individuals whose employment in licensed nuclear power reactors has been interrupted for a continuous period of more than 365 days, the individual's activities must be investigated according to the applicable requirements of paragraph (c) of this section and a new psychological assessment made according to the requirements of paragraph (d) of this section.

(2) Consistent with the requirements of § 50.70(b)(3) of this chapter, the licensee shall grant unescorted access authorization to protected areas and vital islands without further investigation by the licensee with regard to the requirements of this section to all employees of the Commission who have been certified by the NRC to have met the intent of the requirements of this section.

(3) During cold shutdown or refueling operations, as specified in the facility's technical specifications, as required in 10 CFR 50.36, the licensee has the option to grant a temporary unescorted access authorization to an unscreened individual if:

(i) The requirements of § 73.55 of this chapter are followed; and

(ii) The affected individual is subject to the continual behavioral observation requirements of paragraph (e) of this section.

(g) *Review Procedures.* The licensee's plan submitted pursuant to § 73.56(a) this of chapter must include a procedure for the review of a denial or revocation under this section of an access authorization of an employee of the licensee, contractor, or supplier that has an adverse effect on the individual's employment. The procedure must provide notice and an opportunity for a fair evidentiary hearing and be consonant with fundamental principles of due process. The grievance review procedure contained in the collective bargaining agreement covering the bargaining unit of which the employee is a member will normally meet this requirement, and may be used for this purpose whether or not the denial or revocation of access authorization is a grievable action under the contract.

(h) *Protection of Information.* (1) Each licensee, contractor, or supplier who collects personal information on an employee for the purpose of complying with this section shall establish and maintain a system of files and procedures for the protection of the personal information.

(2) The licensee, contractor, or supplier shall not disclose the personal information collected and maintained to persons other than the subject individual, or his representative, or to those who have a need to have access to

the information in performing assigned duties in the process of granting or denying access to protected areas and vital islands.

(3) The licensee shall have access to and periodically audit contractor records to ensure that the requirements of § 73.56 are being met in accordance with the licensee's approved physical protection plan.

(4) The licensee shall make available files or documents relied upon by the licensee, including records of audits done on the contractor's screening program, for examination by an NRC inspector to allow the NRC to determine the licensee's compliance in implementing its approved plan.

(5) The licensee shall retain the access authorization file of an individual for three years after termination of the unescorted access authorization for protected areas and vital islands.

8. Appendix B of Part 73 is amended by revising paragraph I.B.2.c. to read as follows:

APPENDIX B—GENERAL CRITERIA FOR SECURITY PERSONNEL

* * * * * *

I. Employment suitability and qualification.

* * *

B. Physical and mental qualification. * * *

2. Mental qualification. * * *

c. The licensee shall arrange for continued observation of security personnel and for appropriate corrective measures by responsible supervisors for indications of emotional instability of individuals in the course of performing assigned security job duties. Identification of emotional instability by responsible supervisors must be subject to verification by a licensed, trained person. This paragraph does not apply to security personnel at nuclear power reactors licensed under 10 CFR Part 50. These licensees shall consult § 73.56(e).

* * * * * *

Dated at Washington, DC this 27th day of July, 1984.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

49 FR 31432
Published 8/7/84
Comment period expires 8/13/84.

10 CFR Part 50

Environmental Qualification of Electric Equipment; Removal of June 30, 1982 Deadline

AGENCY: Nuclear Regulatory Commission.

ACTION: Extension of Comment Period.

SUMMARY: Because of confusion regarding the finality of the May 1, 1984 deadline to comment on this proposed rule, 49 FR 8445 (March 7, 1984), the Commission hereby extends the comment period to August 13, 1984.

ADDRESSES: Mail comments to: Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Deliver comments to: Room 1121, 1717 H Street, NW., Washington, D.C. between 8:15 a.m. and 5:00 p.m. Examine copies of comments received at: The NRC Public Document Room, 1717 H Street, NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Juan L. Rodriguez, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone (202) 634–3224.

SUPPLEMENTARY INFORMATION: On March 7, 1984, the Nuclear Regulatory Commission initiated a rulemaking proceeding on whether to delete from certain licenses for nuclear power plants a June 30, 1982 deadline for completing the environmental qualification of certain electric equipment. The deadline for comments on the proposed rule was set at May 1, 1984. As that deadline approached, several requests for extensions of up to thirty days were received. Subsequently, by telephone call of July 16, 1984, and letter of July 17, 1984, a Commission attorney informed those requesters that comments filed by July 20, 1984 would be considered fully. However, recent correspondence to the Commission indicates that there was still some confusion regarding the deadline for submitting comments. Accordingly, to assure that no commenters will be cut off by a misunderstanding about the close of the comment period, the Commission hereby extends the deadline for comments to August 13, 1984. All comments now in the Commission's hands together with comments received by August 13, 1984 will be considered timely and will be given full consideration.

Those individuals who previously requested extensions have been notified directly of this extension. The Commission notes that by Order of the U.S. Court of Appeals for the D.C. circuit, a final rule is to be published by August 15, 1984. Therefore, the Commission urges anyone who intends to comment to do as quickly as possible. The Commission may have to petition the D.C. Circuit for an extension of the August 15, 1984 deadline for rulemaking to assure that such comments can be fully considered.

Dated this 2nd day of August 1984, at Washington, D.C.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

49 FR 39066
10/3/84

10 CFR Part 50

Public Notice of Availability of Program Plan to Review Effectiveness of LWR Regulatory Requirements in Limiting Risk

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of availability.

SUMMARY: The NRC staff intends to initiate a review of the risk importance of current regulatory requirements for Light Water Reactors (LWR). This program is being initiated to identify current regulatory requirements which, if deleted or appropriately modified, would improve the efficiency or effectiveness of NRC's regulatory program for nuclear power plants without adversely affecting safety. Initially, this program will systematically assess the risk importance of selected current regulations in 10 CFR Part 50 and related regulatory requirements. The NRC staff is seeking public comment on the Program Plan prepared by the staff to describe the review program.

ADDRESS: A copy of the Program Plan is available for public inspection and copying in the NRC Public Document Room, 1717 H Street NW., Washington, DC. Copies may also be obtained by writing to Dr. Anthony Tse at the address listed below.

FOR FURTHER INFORMATION CONTACT: Dr. Anthony N. Tse, Regulatory Analysis and Materials Risk Branch, Division of Risk Analysis and Operations, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555; telephone: (301) 443–7920.

SUPPLEMENTARY INFORMATION: At the direction of the Executive Director for Operations, the NRC staff has initiated a program to identify current regulatory requirements which, if deleted or appropriately modified, would improve the efficency and effectiveness of the NRC regulatory program for nuclear power plants without adversely affecting safety. A number of existing programs [1] assess the adequacy of present regulations. However, these programs are not specifically designed to weed out existing regulations or regulatory requirements which do not reduce risk significantly. Initially, this program is designed to (1) systematically screen all current regulatory requirements associated with 10 CFR Part 50 and to assess the importance of selected requirements based first on their contribution to assuring that nuclear power plants are safely designed, constructed, and operated and second on their impact on licensee, applicant, and NRC resources, and (2) identify and propose appropriate modifications to eliminate duplication, inconsistency or unnecessary requirements and thus focus available NRC and industry resources more directly and precisely on the significant safety areas and issues.

Prime candidates for modification will be (1) old regulatory requirements which in light of present knowledge may no longer be considered risk important or whose risk importance may have been reduced substantially by the implementation of newer requirements and (2) areas in which there are large safety margins or conservatisms which can be reduced without measurably increasing the level of risk. In such cases modification could produce a significant safety benefit, since the attention and resources of licensees, applicants, and the NRC that are now directed to these areas could be redirected to other areas of greater safety significance.

The initial work, to be completed in FY 1985, will include a survey of regulatory requirements associated with 10 CFR Part 50 to categorize them according to their relative safety significance. In a parallel effort, several requirements that appear to be good candidates for modification or elimination will be evaluated in detail to assess their safety benefits and the NRC and industry costs of implementation. At the end of 1985, the NRC will ascertain the usefulness of this program and determine whether any of the identified candidates should be pursued further in a rulemaking.

As part of the program, the NRC will solicit suggestions from the regulated industry as to candidate requirements that might be eliminated or modified to improve the effectiveness and the efficiency of the regulatory program. The NRC will also consider any other public comments received. All suggestions will be evaluated by the staff, but none will be considered as petitions for rulemaking or as formal comments that require response. Any petitions for rulemaking must be submitted as directed in § 2.802 of 10 CFR Part 2 of the Commission regulations.

Any suggestions would be welcomed and should be sent to Dr. A.N. Tse.

Dated at Washington, DC, this 17th day of September 1984.

For the Nuclear Regulatory Commission.

William J. Dircks,
Executive Director for Operations.

[1] Examples include (1) the Generic Issue and Unresolved Safety Issue programs; (2) programs and tasks that would be guided by the Severe Accident Policy Statement when issued; (3) the Integrated Safety Assessment Program for operating reactors; (4) the operating experience review by the Office for Analysis and Evaluation of Operational Data; and (5) the many studies, analyses, test and experiments supported by the Office of Research.

≫49 FR 44645
Published 11/8/84
Comment period expires 1/7/85.

10 CFR Part 50

Changes in Property Insurance Requirements for NRC Licensed Nuclear Power Plants

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is proposing to amend its regulations requiring licensees to maintain substantial amounts of on-site property insurance to assist in the decontamination of their licensed reactors. The changes are being proposed to increase the amount of insurance required and impose a decontamination priority on any proceeds from such insurance. Although all commercial reactor licensees would be subject to this proposed rule if adopted, only those that do not currently carry the maximum property insurance available would be affected.

DATE: Comment period expires January 7, 1985. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Mail written comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

Deliver comments to: Room 1121, 1717 H Street, NW, Washington, DC, between 8:15 a.m. and 5:00 p.m. weekdays.

Copies of the regulatory analysis, OMB clearance supporting statement, the environmental assessment and finding of no significant impact, documents referenced in this notice, and comments received may be examined at: The NRC Public Document Room at 1717 H Street, NW, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Robert S. Wood, Office of State Programs, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone (301) 492–9885.

SUPPLEMENTARY INFORMATION:

Background

On June 24, 1982, an Advance Notice of Proposed Rulemaking (ANPRM) was published in the **Federal Register** (47 FR 27371). The notice sought comment on a report prepared for the staff by Dr. John D. Long entitled *Nuclear Property*

Insurance: Status and Outlook (NUREG–0891), which raised several issues germane to the Commission's final rule (47 FR 13750) adopted on March 31, 1982 and codified as 10 CFR 50.54(w). (Copies of NUREG–0891 may be obtained under the NRC/GPO Sales Program at a cost of $6.00 by writing to the Director, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555.) 10 CFR 50.54(w) currently requires operating reactor licensees to carry both the maximum amount of property insurance offered as primary coverage by either American Nuclear Insurers/Mutual Atomic Energy Reinsurance Pool (ANI/MAERP) or Nuclear Mutual Limited (NML)—currently $500 million—plus any excess coverage in an amount no less than that offered by either ANI/MAERP—$85 million as of January 1, 1984—or Nuclear Electric Insurance Limited (NEIL)—$435 million as of February 15, 1984. Currently, the minimum required under the rule is $500 million primary coverage and $85 million excess coverage. By buying both excess layers, utilities are able to purchase a total of $1.02 billion in property insurance.

Analysis of Comments

The report by Dr. Long, together with four comprehensive questions posed by the staff to focus the issues raised in NUREG–0891, formed the basis for seeking public comment by the ANPRM. The Commission received 47 comments in response to the ANPRM. Comments were mostly from utilities or their counsel, but several insurers, individuals, and trade associations also commented. Almost without exception, commenters objected to the recommendations in NUREG–0891 although they stated that the report provided valuable insights and historical perspective on the workings of nuclear property insurance. Few commenters appeared to object to the existing Commission rule on property insurance. Some utilities would have the Commission recognize in a revised rule that reactor size should be considered when setting the required amount of insurance. A few utilities want the Commission to preempt the constitutional provisions of certain states that prohibit utilities from participating in mutual or retroactive assessment insurance plans. But, on the whole, commenters did not object to the general thrust of the existing property insurance rule, nor to most of its specific provisions. With respect to the four questions posed by the NRC in the ANPRM, a summary of the comments is provided below.

Question 1: The first question asked what amount of insurance should be required. If increased coverage is required, what should be the basis for such a requirement? One option proposed was that additional coverage could come about by the NRC publishing annually the amount maintained by each commercial reactor licensee. This information could then be utilized by market forces to optimize insurance coverage.

Comments varied widely with respect to the issue of how much insurance should be carried. Although some commenters believe that cleanup costs associated with the TMI–2 accident are revelant, others stated that TMI–2 was unique, that lessons learned from the accident will reduce future cleanup costs substantially, even if an accident of the same severity occurs. Others believe that a study is needed to determine what a "maximum probable loss" would be. Still others believe that maximum coverage should be set for each plant individually to reflect its particular risk.

Most commenters critcized the idea of an NRC requirement that primary coverage offered both by Nuclear Mutual Limited (NML) and American Nuclear Insurers/Mutual Atomic Energy Reinsurance Pool (ANI/MAERP) be purchased. Although combining both plans could currently provide primary coverage of $1 billion, certain structural problems complicate this approach. As indicated in NUREG–0891 and as several commenters developed further, both NML and ANI/MAERP use many of the same reinsurers to reduce their exposure to possible accident claims. Some believe that reinsurers would be reluctant to expose themselves to the same risk twice as they would do if a reactor licensee were required to obtain primary coverage both from ANI/MAERP and NML. Thus, if licensees were required to buy insurance from both offerers, the resultant combined coverage would be some indeterminate level less than a simple adding of capacities. Moreover, combining capacity at the primary layer might also affect the premium structure at the secondary layer.

Another problem discussed in NUREG–0891 but more strongly emphasized by many commenters is that, by requiring combined primary capacity, competition is reduced and possible antitrust problems are raised. Without the choice of coverage offered by two competing insurers, they argued that resultant capacity might not grow as quickly as it otherwise would, terms and conditions might not be as advantageous, and premiums might increase disproportionately.

Other commenters indicated the difficulty in making combined coverages compatible with the regulatory environments within which utilities operate. Some utilities, either because of their own philosophy or because of constraints imposed by the state authority will not or cannot participate in, for example, insurance plans that provide for retroactive assessments or that are offered by mutual companies. (Retroactive assessments are used in conjunction with, or to replace, premiums payable at the beginning of each policy year at a specified rate. Retroactive assessments are made only when and if needed to pay losses already incurred. Mutual companies are structured such that the insureds become part owners of the insurance company.)

Many commenters were receptive to the suggestion that setting approximate limits should be left to market forces. In its simplest form, this would involve eliminating the current rule and allowing utilities to purchase whatever insurance they deem necessary. Another approach as suggested in the ANPRM would be to publish annually the coverage carried by all licensees, and induce changes where deemed appropriate through the state and local political process. Although few commented on this proposal specifically, those that did preferred it to increasing insurance requirements directly. Some utilities opposed reporting the coverage that they carried.

Question 2: The second question posed in the ANPRM asked whether there should be special provisions for certain types of licensees. For example, should smaller plants be allowed to buy less insurance because of potentially reduced levels of contamination? Also, should the NRC exempt from applicable portions of property insurance requirements those utilities prohibited by state law from obtaining coverage from certain types of insurers? Should utilities with multiple-reactor sites be required to obtain coverage for each unit separately, or is site-wide coverage sufficient?

With respect to reactor size vis-a-vis coverage limits, representatives of utilities with smaller plants or unusual design configurations (such as Fort St. Vrain, a high temperature gas-cooled reactor (HTGR)) strongly urged the Commission to allow reduced coverage for them. Representatives of utilities with large reactors did not comment on this issue, indicated that no such distinction should be made, or suggested that distinctions be made by exception rather than the rule itself.

Few comments were offered on the issue of whether the NRC should make special allowance for those utilities prohibited by state law from buying insurance from assessment or mutual companies. Generally, utilities in states with such provisions urged the Commission to preempt state law. Other

parties suggested that perhaps NRC authority to preempt was not so clear cut. Still other commenters suggested that a solution short of preemption may be available by working out this problem with the states involved, although no specific course of action was suggested.

Although few commented on the question of whether coverage should be by site or unit, those that did unanimously favored site-wide coverage. Some cited the example of General Public Utilities, where insurance coverage was reinstated after the accident at TMI–2. Others indicated that coverage by unit would increase the risk exposure of insurers at each location so covered. As a result, a reduction in insurance capacity would probably result.

Question 3: The third question pertained to a series of interrelated issues having to do with the structure, terms, and conditions of the property insurance currently offered. Almost all commenters expressed strong opinions that, in general, the NRC has neither the expertise nor authority to regulate terms and conditions of insurance. If the NRC were to exercise such authority, commenters maintained, it would likely inadvertently restrict capacity growth or increase prices to the detriment of its overall objectives.

NUREG–0891 suggested that the Commission refuse to accept insurance whose premiums are not discounted when used in conjunction with insurance from another carrier. Few commented directly on this proposal, but those that did opposed it. Even those utilities that might theoretically benefit from reduced premiums opposed it implicitly by their being against NRC regulation of terms and conditions of policies. NML offered through its counsel the most comprehensive argument against it. This commenter drew a distinction between insurance offered by the pools—in which no single pool member places a significant portion of its assets at risk—and insurance provided by NML, by which losses are paid by the members themselves either through premiums or retroactive assessments. Because members of NML are, in effect, self-insuring and thus exposing a substantially higher percentage of their assets than the pools, NML is not able to be as flexible with its premium structure. The premiums of the two types of insurers are thus not comparable.

NUREG–0891 suggested that the use of retroactive assessments may be reaching the limits of sound insurance practice and recommended that retroactive insurance be eliminated from any future coverage. Most commenters disagreed with this assertion, although they often directed their comments more toward maintaining existing retroactive assessment insurance. Many pointed out that assessment insurance was the only way available to increase property insurance capacity rapidly. Some drew the analogy to the Price-Anderson system, which instituted retroactive assessments in 1977 to speed the phase-out of government indemnity. One commenter stated that since it is a public utility rather than an insurance or investment-type company, it would prefer not to have large amounts of capital passively invested in an insurance program awaiting a highy unlikely policy limits loss. Although this and other commenters acknowledge that "overuse" of retroactive assessments could occur at some point, they did not believe that such point had yet been reached.

NUREG–0891 recommended that all proceeds from property insurance be used to pay for decontamination after an accident before claims of creditors and owners are satisfied. Of all recommendations, this perhaps provoked the most negative reaction. Many indicated that such a priority would adversely affect ratings of utility debt issues, would most likely violate existing indenture agreements and would otherwise adversely affect utility access to capital markets. Others point out that a decontamination priority could adversely affect nuclear fuel leasing arrangements whose covenants often require physical damage insurance in which the fuel lessee and its creditors are named loss payees.

Other commenters argued that a decontamination priority, by artificially restricting earlier use of funds for restoration of the plant, could interfere with the most effective means of restoring the plant and could, in an extreme situation, create the very financial uncertainty that the insurance would be designed to forestall. Another commenter presented an argument that recognized that only when an accident is severe enough that a plant could never be restored would creditors possibly exercise their rights over decontamination. If, in the course of the decontamination process, it appeared that the insurance and other financial protection programs would be insufficient to accumulate additional resources, additional time would be available to obtain necessary resources.

The Association of the Bar of the City of New York (City Bar Association) offered an analysis of both the need and authority for a modified decontamination priority. First, City Bar Association found that sections 103(d), 182(a) and 161 of the Atomic Energy Act provide the Commission with authority to require all licensees of commercial reactors to maintain specified levels of decontamination and debris removal coverage upon a proper finding that such a requirement was necessary or appropriate to protect the public health and safety.

Second, the City Bar Association pointed out that the utility trust indentures to which many commenters directed their attention normally are "fairly uniform in language, requiring the utility to insure its property against loss or damage to the same extent that property of a similar character is *usually so insured by companies similarly situated and operating like properties*" (original emphasis). From this language, City Bar Association determined that utility trust indentures do not in general give bondholders any vested right to a given amount or type of coverage. Further, if a trustee were to refuse to release funds for cleanup to a utility, such action "could very well render the company insolvent, and in the extreme (but not necessarily remote) case precipitate a bankruptcy or reorganization." If this occurred, the Commission could take over and operate a damaged plant under sections 186(a) and 188 of the Act and would likely seek reimbursement from the utility or its successor for costs incurred in decontaminating the plant. The City Bar Association concluded, "It is uncertain whether any claim made by the indenture trustee on behalf of the utility's bondholders to property insurance proceeds would survive, at least to the extent of the Federal government's claim."

However, this commenter also recognized that to respond properly to a nuclear accident, a licensee may be required to take a range of actions apart from decontamination and debris removal. Consequently, this commenter favors priority for payment of decontamination and debris removal expenses insofar as it is "necessary to remove any significant health or safety hazard". The commenter believes this goal can be accomplished if a regulation is properly drawn, although it proposed no wording for such a regulation in its comments.

Question 4: The fourth and final question posed in the ANPRM concerns whether the NRC should become involved in regulating the replacement power insurance program as offered by Nuclear Electric Insurance Limited (the so-called NEIL–I coverage). This question assumes that replacement power insurance, if eliminated, would allow increases in capacity of insurance programs more directly tied to protecting public health and safety. Most commenters opposed eliminating replacement power insurance. Some pointed out that, although it does not further decontamination directly, it

helps indirectly by reducing the large financial drain faced by a utility buying replacement power after an accident. Counsel for NEIL maintained that eliminating replacement power insurance would not necessarily increase capacity for property insurance. NEIL–I's accumulated surplus cannot simply be allocated to property insurance without infringing on the rights of the NEIL–I member insureds who might or might not choose to pool their resources to increase property insurance capacity further.

Conclusions

Results of PNL Study: Underlying various proposals by the NRC, Dr. Long, the utilities, the nuclear and insurance industries, and the public has been the recognition that, prior to the TMI–2 accident, insurance for decontamination of a reactor after an accident was inadequate. The rule issued on March 31, 1982 for the first time required NRC licensees to obtain substantial amounts of such insurance. Although some utilities and other commenters opposed adoption of any requirement for on-site property damage insurance when the initial rule was proposed, most commenters now seem to recognize, either tacitly or explicitly, that the Commission's concerns are valid and that a rule, if properly drafted, represents appropriate public policy. The reevaluation of the March 31 rule does not question the need for property insurance; rather it implicitly asks the question, "How much insurance is enough?"

Part of the answer to this question has been provided by a Pacific Northwest Laboratory (PNL) Study, *Technology, Safety and Costs of Decommissioning Reference Ligh Water Reactors Following Postulated Accidents* (NUREG/CR–2601; November 1982). (Copies of this report may be obtained under the NRC/GPO Sales Program at a cost of $13.00 by writing to the Director, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555.)

The study evaluated cleanup costs following three accidents of varying severity at two reference light water reactors. The scenario 1 accident is postulated to result in 10% fuel cladding failure, no fuel melting, moderate contamination of the containment structure, but no significant physical damage to buildings and equipment. The scenario 2 accident is postulated to result in 50% fuel cladding failure, a small amount of fuel melting, extensive radioactive contamination of supporting buildings, and minor physical damage to buildings and equipment. The scenario 3 accident is postulated to result in 100% fuel cladding failure, significant fuel melting and core damage, severe radioactive contaimination of the containment structure, moderate radioactive contamination of supporting buildings, and major physical damage to structures and equipment. A TMI–2-type accident was assumed in the study to be of intermediate severity.

The range of cleanup cost established in the report was from $105.2 million to $404.5 million for the reference PWR and from $128.5 million to $420.9 million for reference BWR. Although these costs are considerably lower than would be expected from the roughly $1 billion estimated to be required to clean up TMI–2, they do not include several cost components included in the TMI–2 estimate. For example, $124 million for base operations and maintenance and $209 for cost escalation due to inflation during cleanup were included in the TMI–2 estimates but not in the PNL study. Other differences relating to plant design, additional decontamination of the containment building, and cost of facility stabilization at TMI–2 cause the PNL estimates to increase to $106 billion for the most severe accident studied and somewhat less for a TMI–2-type accident. (See NUREG/CR–2601, pp. 2–27 ff.)

The NRC has drawn several conclusions from the results of the PNL study. First, the need for property insurance much in excess of $1 billion does not appear to be compelling, although this conclusion would have to be periodically reconfirmed by additional data as they become available. This would include any adjustments needed to account for inflation, as discussed later. Second, despite the wide range of costs estimated in the PNL report, the minimum currently required, $585 million, would be insufficient for some accidents. Although a significant portion of the costs for TMI–2 cleanup has resulted because of financial carrying costs and costs of delaying cleanup while awaiting sources of funding, it is not clear that such costs could be reduced or eliminated in any future accidents, particularly if the effects of inflation are included. Third, while some difference in cost due to variations in reactor design appears to exist, this difference is apparently outweighed by many of the other variables affecting accident cleanup cost. Similarly, PNL did not find a strong relationship between reactor size and cleanup cost. Thus, while the smallest licensed reactors may not need the excess insurance currently available and may seek exemptions to the Commission's regulations, the Commission believes that a close tie between insurance required and reactor size or design is not justified generically in the rule.

Response to Comments and Proposed Rule Changes: The Commission has concluded that some revision to the current interim rule as codified in 10 CFR 50.54(w) is necessary. First, the Commission proposes to revise the rule to require $1.02 billion property damage insurance. Experience at TMI–2 and the PNL study suggest that somewhat less than $1 billion is likely to be required for a scenario-2 accident at a PWR. NUREG/CR–2601 concluded that as much as $1.06 billion could be required to cover a scenario-3 accident at a large BWR if financial carrying costs are included in the cost estimate.

However, requiring the maximum indicated in NUREG/CR–2601 is not justified. First, the difference between the proposed requirement and the maximum estimate ($1.06 billion—$1.02 billion=$0.04 billion) is not significant from a health and safety viewpoint, especially since these figures represent upper-bound estimates. Furthermore, utilities should have little difficulty raising a possible but unlikely $40 million deficit over the several years required for cleanup. Second, the Commission cannot force additional coverage to become available by simply requiring more. If such a requirement were imposed, utilities would be forced to seek more expensive alternative means of coming up with the deficit in coverage. This additional cost does not appear to be justified by the minimal additional contribution to public health and safety that might be engendered by requiring $1.06 million.

Concurrently, the Commission has concluded that adequate property insurance coverage cannot be effected through merely publishing annually the amount maintained by each commercial reactor licensee and relying on market forces to set the appropriate amount. The Commission also proposes not to increase coverage by requiring licensees to carry both primary policies. As indicated by commenters, combining the primary capacity of both insurers raises too many problems with respect to antitrust policies and reinsurance practice.

Likewise, requiring utilities to purchase all future excess capacity, whatever the amount, could cause, if that capacity grows significantly, an undue burden on utilities without a commensurate increase in protecting public health and safety. Nevertheless, because of the possibility of increased future decontamination costs from inflation or other factors, the Commission is interested in receiving comments on how the property insurance requirement should be adjusted to meet needs in the future. One option is to have the Commission periodically review estimated accident cleanup costs and propose new rulemaking to increase insurance when

needed. Alternatively, the Commission could require utilities to purchase all future increases in excess capacity. Those excess amounts not needed to protect public health and safety could be addressed by particular utilities through the exemption process. A third option would be to periodically adjust the required amount of insurance by use of the consumer price index, available indexes of construction costs, or some other measure of inflation. However, any general inflation index would probably not accurately gauge reactor accident cleanup costs. Further, if insurance capacity grows at less than the inflation rate, the Commission could inadvertently require more insurance than commercially available.

With respect to the issue of per-site or per-unit coverage raised in question 2 in the ANPRM, such coverage is not offered by the insurers. The Commission does not believe that such coverage is needed because the probability of a particular licensee suffering an accident at a second unit before reinstatement of insurance after an accident at its first unit is extremely low. Thus, the proposed rule clarifies that site-wide coverage is acceptable and that per-unit coverage is not required.

Some commenters on question 2 have suggested that the NRC should preempt state law where such law prohibits utilities from buying insurance from mutual insurers or where insurers use retroactive assessments. To analyze this issue, the staff has prepared an "Analysis of Proposed Revisions to the Property Damage Insurance Rule and the Issue of Federal Preemption." (Interested persons may examine and copy for a fee a copy of this analysis at the NRC Public Document Room, 1717 H Street NW, Washington, DC. Single copies may be obtained from Robert S. Wood, Office of State Programs, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone (301) 492–9885.)

This report concluded:

> The Commission probably lacks the authority to promulgate a rule that would preempt these state prohibitions. The Atomic Energy Act does not expressly preempt the field of nuclear property damage insurance, and the state prohibitions are not concerned with reactor safety. Thus, there is no question of express or implied preemption based on federal occupation of the field or an impermissible state purpose. Indeed, the state prohibitions are not even concerned with reactors, but rather with insurance and a municipality's use of public funds—matters traditionally regulated by the states. Accordingly, Congressional intent to preempt state law must be clear.
>
> There does not appear to be an actual conflict between federal and state law. Although the state prohibitions may operate to restrict a utility's available options for compliance with the Commission's property insurance rule, compliance with both federal and state law is physically possible. The rule is sufficiently flexible to permit a utility to demonstrate adequate financial surety by a variety of means. A utility that is unable to comply will face denial of its application or revocation of its operating license, consistent with federal law. In addition, the state prohibitions do not appear to frustrate the purposes of the Atomic Energy Act. The federal interest in promoting nuclear power is not sufficient to override legitimate state interests, and the state prohibitions do not interfere with the federal objective of ensuring uniform federal safety standards for nuclear reactors.
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> Under *Pacific Gas, supra*, the Atomic Energy Act provides for a system of dual regulation of nuclear power in which the Federal Government maintains exclusive control over reactor safey and the States exercise their traditional authority over economic matters. This suggests that a state could probably decide, on economic grounds, that nuclear utilities should be directly prohibited from purchasing certain types of property damage insurance. An indirect state prohibition, affecting only those nuclear utilities that happen to be municipally owned, is even more likely to withstand a challenge on federal preemption grounds.
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> . . . The state prohibitions can coexist with federal law without significantly affecting the Commission's regulation of nuclear safety. Few licensees would be affected, and the rule is sufficiently flexible to allow compliance by alternate means. Accordingly, the Commission should promulgate its property insurance rule to require the amount of financial surety it believes is necessary to protect the public health and safety in the event of a nuclear accident, without regard to the issue of federal preemption. (Report, p. 17 ff.)

In its analysis, the staff determined that the existing provision on the preemption question (10 CFR 50.54(w)(3)) was unnecessary. As stated in the report, ". . . it appears that the provision could not be used to exempt a utility from the obligation to obtain the full amount of coverage required simply because of the prohibition. Consistent with the Commission's responsibilities under the Atomic Energy Act, any exemption would have to be based not on the provisions of state law but on a determination of what is required to protect the public health and safety in the event of a nuclear accident. Thus, § 50.54(w)(3) could be used to require a utility to purchase only the amount of insurance that is reasonably available to it, and to permit the utility to furnish any additional protection required by alternate means. The same result could be obtained under the general provision allowing financial surety by alternate means. Thus, paragraph (w)(3) is unnecessary and should be deleted."

Another area where some have suggested that change to the interim rule may be warranted is in recognizing that very small operating plants may not need the full amounts of insurance required. After the interim rule was published, owners of five small plants requested that the NRC exempt them from some portion of the property insurance requirements. The NRC has fully granted three requests, partially granted one request, and denied one request, pending receipt of additional information. However, the NRC proposes not to exempt other small licensees generically. Because the PNL study found only a weak relationship between reactor size and accident decontamination cost, it is more appropriate to address exemptions on a case-by-case basis rather than generically in the rule.

The Commmission has generally accepted the comments directed to the issues raised in question 3 of the ANPRM. Thus, the Commission does not propose to regulate the terms and conditions of property damage insurance. Such issues include whether the Commission should refuse to accept insuance whose premiums are not discounted when used in conjunction with insurance from another carrier and whether further use of retroactive assessments should be curtailed. The Commission has concluded that these issues do not sufficiently affect public health and safety to warrant additional action.

However, the NRC believes that NUREG–0891 and commenters on question 3 of the ANPRM raised legitimate concerns with respect to the issue of requiring a decontamination priority for all property insurance obtained. Comments offered by the Association of the Bar of the City of New York provide the most complete discussion of this issue. The Commission agrees that proceeds from property insurance must be used first to protect public health and safety. In fact, the Commission has no reason to impose a property insurance requirement other than to protect public health and safety. Proceeds from insurance would be used both to assure that contamination from a reactor immediately after the accident did not threaten public health and safety and the environment and to eliminate delays and degradations to the cleanup process that could cause threats to health, safety and the environment over time. The Commission also agrees with comments that a rigid categorical decontamination priority could present an excessive burden on licensees given the benefit to be obtained. Consequently, a modified decontamination priority is proposed in the rule which should not unduly affect utility financial markets. The decontamination priority would take effect only pursuant to an order by the Director of Nuclear Reactor Regulation that prompt decontamination is necessary to protect public health and safety. In this vein, the Commission is interested in receiving comments how it

could assure that insurance proceeds would be used for decontamination rather than for paying creditors or bondholders in the event that a reactor licensee was experiencing serious financial problems.

Finally, with respect to question 4, the Commission agrees with commenters who suggested that eliminating replacement power insurance would not increase capacity for insurance more closely tied to protecting public health and safety.

Commissioner Roberts approved publishing this rule only to obtain more detailed public comments. He requests that commenters provide up-to-date data to support their positions.

Finding of No Significant Environmental Impact

The Commission has determined under the National Environment Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment and therefore an environmental impact statement is not required. Although changes in insurance requirements affect the financial arrangements of licensees and have economic and social consequences, they do not alter the environmental impact of the licensed activities. As determined in the environmental assessment, the alternatives to the proposed action likewise do not have any significant impact on the environment and no other documents related to this proposed action exist. The environmental assessment and finding of no significant impact on which this determination is based are available for inspection at the NRC Public Document Room, 1717 H Street NW, Washington, DC. Single copies of the environmental assessment and the finding of no significant impact are available from Robert S. Wood, Office of State Programs, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone (301) 492–9885.

Paperwork Reduction Act Statement

This proposed rule does not contain a new or amended information collection requirement subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). Existing requirements were approved by the Office of Management and Budget (approval number 3150–0011).

Regulatory Analysis

The Commission has prepared a draft regulatory analysis on this proposed regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. Interested persons may examine and copy for a fee a copy of the draft regulatory analysis at the NRC Public Document Room, 1717 H St. NW, Washington, DC. Single copies of the analysis may be obtained from Robert S. Wood, Office of State Programs, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone (301) 492–9885.

Regulatory Flexibility Act Certification

As required by the Regulatory Flexibility Act of 1980, (5 U.S.C. 605(b)), the Commission certifies that this rule, if adopted, will not have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

Under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is proposing to adopt the following amendment to 10 CFR Part 50.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 continues to read as follows:

Authority: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, 202, 206, 88 Stat. 1242, 1244, 1246, as amended (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Section 50.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Sections 50.57(d), 50.58, 50.91, and 50.92 also issued under Pub. L. 97–415, 96 Stat. 2071, 2073 (42 U.S.C. 2133, 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80–50.81 also issued sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Sections 50.100 - 50.102 also issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10, (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10(b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i); and § 5055(e), 50.59(b), 50.70, 50.71, 50.72, 50.73, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. Section 50.54 is amended as follows:

a. Paragraph (w)(1) is revised.

b. Paragraph (w)(2) and (w)(3) removed.

c. Paragraph (w)(4) is redesignated as (w)(2) and revised.

d. New paragraph (w)(3) is added.

§ 50.54 Conditions of licenses.

* * * * *

(w) * * *

(1) This insurance must have a minimum coverage limit for the reactor station site of no less than $1.02 billion.

(2) The licensee shall report on April 1 of each year to the NRC as to the present levels of this insurance or financial protection it maintains and the sources of this insurance or protection; and

(3) The proceeds of this insurance shall be used first to decontaminate the licensed reactors before any other purpose when and to the extent that such decontamination is required to protect public health and safety and is so ordered to be used by the Director of Nuclear Reactor Regulation.

* * * * *

Dated at Washington, DC this 2nd day of November 1984.

Samuel J. Chilk,

Secretary of the Commission.

49 FR 46428
Published 11/26/84
Comment period expires 2/25/85.

10 CFR Parts 50 and 55

Operator's Licenses and Conforming Amendment

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission is proposing to amend its regulations to (1) clarify the regulations for the issuance of licenses to operators and senior operators; (2) revise the requirements and scope of written examinations and operating tests for operators and senior operators, including a requirement for a simulation facility; (3) codify procedures for the administration of requalification examinations; and (4) describe the form

and content for operator license applications. The proposed rule is necessary to meet NRC responsibilities under section 306 of the Nuclear Waste Policy Act of 1982.

DATE: Comment period expires February 25, 1985. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Mail written comments to Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. Deliver written comments to Room 1121, 1717 H Street NW., Washington, DC.

Copies of the regulatory analysis, the supporting statement for the Office of Management and Budget clearance of the information collection requirements, the other documents and material discussed in this notice, and any comments received may be examined at the NRC Public Document Room at 1717 H Street NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: D. Beckham, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492–4868.

SUPPLEMENTARY INFORMATION:

I. Introduction

Section 107 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2137), requires the Nuclear Regulatory Commission to prescribe uniform conditions for licensing individuals as operators of production and utilization facilities and to determine the qualifications of these individuals and to issue licenses to such individuals. The regulations implementing these requirements are set out in Part 55 of Chapter 1, Title 10 of the Code of Federal Regulations. To assist licensees and others, the Commission has also issued regulatory guides and generic letters which provide guidance on acceptable methods of meeting these regulatory requirements.

The Commission has become increasingly aware of the need to update its operator licensing regulations and related regulatory guides. These revisions are needed to clarify the extent to which simulators should be used in training and in licensing examinations and to reflect upgraded requirements for licensed operator selection, training, and requalification program resulting from the accident at TMI–2. Although the Commission has been actively engaged in investigating these matters, the schedule for completing these activities was further accelerated by the enactment on January 7, 1983, of the Nuclear Waste Policy Act of 1982, Pub. L. 97–425. Section 306 of that act (42 U.S.C. 10226, 96 Stat. 2501 at 2262–2263) directs the NCR to establish simulator training requirements for applicants for operator licenses and for operator requalification programs, requirements governing NRC administration of requalification examinations, and requirements for operating tests at civilian nuclear power plant simulators.

The proposed revisions would improve the operator licensing process. If adopted these revisions should achieve the following objectives:

1. Improve the safety of nuclear power plant operations by improving the operator licensing process and examination content;

2. Provide the NRC with an improved basis for administering operator licensing examinations and conducting operating tests; and,

3. Respond to the specific direction given by Congress in section 306, Nuclear Waste Policy Act of 1982, Pub. L. 97–425, to promulgate regulations and guidance in the area of examinations.

II. Proposed Actions

This section summarizes the proposed modifications to 10 CFR Part 55 on operators' licenses and 10 CFR 50.74 as a conforming amendment.

10 CFR Part 55—Operators' Licenses

This section describes the changes which have been made to 10 CFR Part 55 to improve examination content, operating test administration, the license application process and several other provisions.

1. *Written Examination* (10 CFR 55.41 and 55.43). Currently written examinations for operators and senior operators are based on the lists of topics in §§ 55.21 and 55.22, respectively. The examinations are developed from information that is available within NRC and received from the facility licensee such as training materials, operating manuals, and technical specifications. Under the proposed changes, examination content, in addition to being developed from sources currently used, would be based on the results of a systematic analysis which the facility licensee or license applicant is expected to perform under the Institute of Nuclear Power Operations (INPO) accreditation and the learning objectives derived from that analysis. The content of the examination would also be developed from information supplied by the facility licensee to the NRC and from information available within NRC.

The use of the systematic analysis information in written examinations would follow the implementation of INPO accreditation at a facility. It is expected that two years would be needed for a licensee or license applicant to complete the systematic analysis and to provide the resulting learning objectives to NRC for use as part of the basis for developing the content of examinations. Meanwhile, the Commission would develop examinations by using the topics in new §§ 55.41 and 55.43, information from industry task analyses, experts and studies in the field, and information from the facility licensees and from within NRC.

For those facilities not expected to complete a systematic analysis under INPO accreditation (i.e., test and research reactors), the Commission would develop examinations using the topics in proposed §§ 55.41 and 55.43, as appropriate to the facility, and information from the facility licensee and experts in the field.

2. *Operating Tests* (10 CFR 55.45). Operating tests currently conducted by NRC include an oral walkthrough in all plants and a simulator examination (detailed in Generic Letter 82–16, dated October 12, 1982)[1] in plants with a plant-referenced simulator. The operating tests require an understanding of twelve items, such as pre-start-up procedures, for the facility. The proposed revisions to § 55.23 (now § 55.45) would require the candidate to demonstrate an understanding of and the ability to perform the actions necessary to accomplish thirteen items based upon the previous twelve plus the individual's team-dependent and time-critical behaviors. The purpose of this requirement is to provide a performance-based operating test. In addition to the required plant walkthrough the proposed amendments would require the operating test to be partially administered in a simulation facility, which may include the plant, a plant-referenced simulator, or another simulation device, alone or in combination, if approved by the Commission after application has been made by the facility licensee. The application process would include an initial application, an annual report and a subsequent application every four years. Initial and subsequent applications would include descriptions

[1] NUREG-series documents and other correspondence referenced are available for public inspection and copying for a fee in the Commission's Public Document Room at 1717 H Street NW., Washington, DC.

of the simulation facility and of the performance tests conducted in support of the application. Information about one type of simulation facility acceptable for this purpose, and a description of performance tests are contained in Regulatory Guide 1.149. The requirement for Commission approval of simulation facilities would ensure that uniform examinations are conducted at all facilities.

For test and research reactors, the proposed requirements in § 55.45 would apply as appropriate to the facility.

Until full compliance with these provisions is reached, NRC would continue to use the procedures outlined in Generic Letter No. 82–18 regarding the use of simulators for initial, replacement and requalification examinations. In addition, the use of the term "simulator" in Appendix A to Part 55 is continued in proposed § 55.59 until proposed new § 55.45(b) is implemented.

The intent of the proposed changes to § 55.45 is to improve operating tests by increasing their uniformity and by adding a requirement for a performance based criterion. To the same end, it is intended that simulation facilities used for the conduct of operating tests meet minimum standards while minimizing the burden to utilities for acquisition and upgrading of such simulation facilities. Therefore, NRC is specifically interested in comments on § 55.45, as indicated in the section of this notice titled "Invitation to Comment."

3. *Administration of Operating Tests Before Initial Criticality* (10 CFR 55.31 and 55.45) Present § 55.25, "Administration of operating test prior to initial criticality," commonly referred to as "cold licensing," has been deleted in the proposed revisions to Part 55. However, the requirements in existing § 55.25 are now incorporated into proposed new §§ 55.31 and 55.45. Specifically, existing § 55.25 (a), (b) and (c) taken together would be replaced by proposed § 55.31(a) (1), (3) and (4) taken together and NRC Form 398; and existing § 55.25(d) would be replaced by proposed § 55.45(b)(2). The intention of the proposed revisions is not to relax the cold licensing examination requirements in any way. The proposed provisions for operating tests, including the simulation facility, would strengthen the entire licensing process. Further, the finding by the Commission that there is an immediate need for the applicant's services and, therefore, for a cold license and that the applicant has had extensive actual operating experience at a comparable reactor or has satisfactorily completed a "cold" license training program accepted by the NRC would be, under the proposed requirements, part of the evaluation of the application for an operator's license.

4. *How to Apply* (10 CFR 55.31). Since applicants currently use NRC Form 398, "Personal Qualification Statement—Licensee," to apply for a license, new § 55.31 has been revised to delete the redundant detailed description of the content of the application and instead directs the candidate to use that form.

5. *Medical Requirements* (10 CFR 55.33(a)(1), 55.57(c)(1), and Subpart C). The specific language in § 55.11(a)(1) would be replaced by the provisions in proposed Subpart C. The proposed revision would change the process for meeting medical requirements. Currently, a medical doctor submits the results of the candidate's examination to the Commission. The proposed rule would require that the results of the candidate's medical examination be provided to the facility licensee or applicant, which would then certify to the Commission that the candidate is in good health as required in § 55.33(a)(1). Licensees and applicants would maintain the results of current medical examinations and provide these to the Commission upon request. Moreover, the notification of disability would be made in 30 days under the proposed changes rather than 15 days as now required. (One example of a medical examination acceptable to the Commission is described in Regulatory Guide 1.134, "Medical Evaluation of Nuclear Facility Personnel Requiring Operator Licenses.")

In July 1983, KMC, Inc. petitioned the Commission (PRM–55–1) "to simplify the procedure for the review of the medical status of applicants for operator-. . . licenses." KMC stated that the current procedures require that a detailed medical history and results of the applicant's medical examination by a licensed physician be sent to the Commission. The petitioner requested that the Commission amend its regulations to permit designated medical examiners, as defined in ANSI–N546–1976, to certify that the applicant has been examined (using the guidance contained in ANSI N546–1976 as endorsed by Regulatory Guide 1.134) and that the applicant's general health and physical condition is not such as might cause operational errors. Under the petitioner s request the use of the current NRC Form 396 would be discontinued for utility operators and detailed medical records would be retained by the licensee's designated medical examiner.

Proposed Subpart C to Part 55 responds to the KMC, Inc. petition. NRC grants its request, in part, by eliminating the requirement to submit, in usual cases, medical information for an applicant for an operator's license directly to the NRC. Instead, a certification to NCR about compliance with the health requirements in proposed § 55.33(a)(1) would be made by the facility licensee. KMC, Inc. has proposed that a certification be submitted by the medical designee of the facility licensee. It is the intent of the proposed Subpart C—Medical Requirements—to have the facility licensee certify to the Commission that the applicant has been examined by a licensed medical practitioner and that the applicant's medical condition and general health are not such as might adversely affect the performance of licensed operator job duties or cause operational errors endangering the public health and safety. Guidance about one acceptable standard against which to conduct the medical examination would be contained in proposed revisions to NRC Regulatory Guide 1.134. That guide endorses ANSI/ANS 3.4–1983 with some exceptions.

For the usual case, that is, when an applicant meets the health requirements, licensee certification to the Commission (based on the recommendation of a licensed medical practitioner) would be all that is needed. However, it is the intent of the proposed regulations to have all unusual cases presented to the Commission with medical evidence to support a conditional license or an exception to the health and medical requirements. Moreover, in cases of disability, the individual operator would be required to immediately cease licensed duties when the facility licensee becomes aware of the operator's incapacitation. Before the operator could resume licensed duties, the facility licensee would be required to provide medical certification, including supporting medical evidence, that the individual again meets licensing health requirements.

6. *Special Senior Operator Licenses* (10 CFR 55.51(b)). A new § 55.51(b) is proposed which would codify in the Commission's regulations two types of special senior operator licenses which are currently issued by NRC. The Special "Fuel Handler" license would authorize senior operators to meet the staffing requirements of 10 CFR 50.54(m)(2)(iv) for supervision of fuel alterations, including fuel loading and transfer. The special "Instructor" license would certify the technical competence of individuals, who are not routinely engaged in operating a facility, to train other individuals to operate a facility.

7. *Conditions of license* (10 CFR 55.53(e)). Guidance about one

interpretation of § 55.53(e) acceptable to the Commission, particularly the phrase "actively performing the functions of an operator or senior operator," is contained in NRC Regulatory Guide 1.8, "Personnel Qualifications and Training for Nuclear Power Plants."

8. *Conditions of license* (10 CFR 55.53(f) and 10 CFR 50.74). To keep the Commission informed of the status of licensed operators, senior operators and special senior operators, a new condition is proposed. Within 30 days of the events set out in the proposed conditions of license, § 55.53(f), the Commission would be notified. Under § 55.53(f), the individual licensee would notify the Commission unless the facility licensee has notified the Commission under a parallel provision in Part 50, proposed as new § 50.74. Under both proposed new provisions to the regulations, § 55.53(f) and § 50.74, the Commission would be notified of changes such as permanent reassignment, termination, disability or illness, or any other condition, including conviction of crimes, which could affect the performance of an operator's duties.

9. *Integrity of examinations and tests* (10 CFR 55.49). As proposed, new § 55.49 would provide that any applicant or licensee who engages in activities that compromise the integrity of an examination or test conducted under the regulations in this part may be guilty of a crime. This provision is added to make explicit that actions such as cheating will not be tolerated. The issue of test integrity is specific to the validity of the examination for its intended purpose, i.e., to test that individual at that time. Conversations after the administration of the examination are not intended to be included.

10. *Expiration* (10 CFR 55.55). Unless renewed, each license would now expire after five years instead of the current two years. This change would reduce facility licensees and NRC paperwork and streamline the renewal process. Moreover, the license would expire when the facility licensee determines and notifies the NRC in accordance with § 50.74 that the individual no longer needs to maintain licensed status. The purpose of this provision is to permit the facility licensee to determine the suitability of an operator for licensed duties or the need for continued licensed status.

11. *Renewal of licenses* (10 CFR 55.57). Several conforming changes are proposed for § 55.57 in order to make the provisions for license renewal compatible with the change in the length of the license term. Proposed § 55.57(c)(2)(ii) would require the successful completion of an annual requalification program. A facility licensee would be required to obtain NRC approval of its requalification program. However, under the proposed amendments the type of requalification program which would be acceptable for license renewal could either be a requalification program developed by the facility licensee using the systems approach to training under an INPO accreditation program or an alternative requalification program developed from the items listed in § 55.59(c). It is expected that submittal of an INPO accreditation letter would be sufficient to obtain NRC approval of this requirement.

A new § 55.57(b)(4) is proposed that would, in part, base renewal of the license on a finding by the Commission that the licensee's past performance has been satisfactory. In making its finding, information such as Notices of Violation or Letters of Reprimand in the licensee's docket would be evaluated by the Commission.

12. *Requalification requirements* (10 CFR 55.59). Licensees would continue to be required to successfully complete an annual requalification program approved by the Commission. Under proposed § 55.59(a)(2), either the licensee would have to pass a requalification examination and operating test administered by the Commission or the Commission could accept certification by the license of the nuclear power plant that the licensed operator or senior operator had successfully completed the approved requalification program. These changes would replace current § 55.33(c)(2)(ii), continue the annual requalification programs, and codify NRC's current practice of active participation in and audit of facility requalification programs.

The proposed revisions are intended to incorporate in the body of the regulations the current requalifications program requirements for research and test reactors and non-reactor facilities since they are not expected to participate in INPO accreditation programs; therefore, proposed new § 55.59(c)(7) tracks the provisions of Part 55, Appendix A(7).

13. *Enforcement* (10 CFR 55.71). Except for a change in format, proposed § 55.71 tracks the provisions of existing § 55.50.

III. Regulatory Analysis

The regulatory analysis describes the values (benefits) and impacts (costs) of implementing the proposed regulations and guidance for operator licensing. The accuracy of these estimates in the regulatory analysis is limited by the lack of extensive data on human performance improvement associated with an improved licensing process. Where possible, quantitative measures were qualitatively compared to related information from other sources for verification. The full text of the regulatory analysis on these proposed amendments is available for inspection in the NRC Public Document Room, 1717 H Street NW, Washington, DC. Single copies of the analysis may be obtained from D. Beckham, Telephone: (301) 492-4868.

IV. Implementation Schedule

Within 120 days after promulgation of the final rule, licensees would have to submit a plan for NRC review and approval for compliance with the provisions of § 55.45(b)(1) which covers the use of simulation facilities. One acceptable example of the content of a plan for § 55.45(b)(1) is described in Regulatory Guide 1.149.

V. Invitation to Comment

Comments concerning the content, level of detail specified, and the implementation of the proposed amendments are encouraged. Suggestion of alternatives other than those described in this notice and estimates of costs for implementation are encouraged.

Since the intent of the proposed changes to § 55.45 is to increase the uniformity of operating tests by establishing minimum standards for their conduct while minimizing the burden to utilities for acquisition and upgrading of facilities to be used for the partial conduct of such tests, the NRC is particulary interested in receiving comments on the following matters related to § 55.45:

1. Is the process specified for application for approval of a simulation facility by a facility licenee reasonable and efficient?

2. What scope and level of detail should be required in an application for approval of a simulation facility?

3. Is the proposed requirement for complete performance testing every four years with annual testing of 25 percent of the total a reasonable balance between the burden on the facility licensee and the increased assurance of performance capability of the simulation facility?

4. How should the selection be made of the 25 percent of performance tests to be conducted annually?

5. Is the guidance in Regulatory Guide 1.149 concerning the criteria that NRC will use in its approval of a simulation facility clear and reasonable?

6. Is the term "simulation facility" (as defined in § 55.4) satisfactory clear, comprehensive and distinctive?

Regulatory Guides

In addition to the propsoed rule, three proposed Regulatory Guides have been revised to provide guidance on acceptable methods of implementing the proposed revisions to the regulations. Comments concerning these Regulatory Guides are encouraged. The two proposed guides on which public comment is requested now are:

1. Regulatory Guide 1.149—Nuclear Power Plant Simulation Facilities for Use in Operator License Examinations (Revised)
2. Regulatory Guide 1.134—Medical Evaluation of Nuclear Facility Personnel Requiring Operator Licenses (Revised)

The proposed guide on which public comment will be requested shortly is:

Regulatory Guide 1.8—Personnel Qualification and Training for Nuclear Power Plants (Revised).

INPO Documents

This preamble refers to the INPO Accreditation Program as described in *The Accreditation of Training in the Nuclear Power Industry.*

The Regulatory Guides 1.134 and 1.149 and the description of the INPO Accreditation Program are available in the NRC Public Document Room, 1717 H Street NW., Washington, D.C. Single copies of the Regulatory Guides may be obtained from D. Beckham, telephone: (301) 492–4868.

Regulatory Guide 1.8 will be available shortly in the NRC Public Document Room. Single copies of Regulatory Guide 1.8 may be obtained, when available, from D. Beckham, telephone: (301) 492–4868.

VI. Environmental Impact: Categorical Exclusion

The NRC has determined that this regulation is the type of action described in categorical exclusion 10 CFR 51.22(c)(1). Therefore, neither an environmental impact statement nor an environmental assessment has been prepared for this regulation.

VII. Paperwork Reduction Act Statement

This proposed rule would amend information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). This proposed rule has been submitted to the Office of Management and Budget for review and approval of the paperwork requirements.

VIII. Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule, if adopted will not have a significant economic impact on a substantial number of small entities. The proposed conforming amendment to 10 CFR Part 50 and the proposed revision of 10 CFR Part 55 affect primarily the companies that own and operate light water nuclear power reactors, and the vendors of those reactors. They also affect individuals licensed as operators at these companies. Neither the companies that own and operate reactors nor these individuals fall within the scope of the definition of "small entity" set forth in section 501(b) of the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration in 13 CFR Part 121.

IX. List of Subjects

10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

10 CFR Part 55

Manpower training programs, Nuclear power plants and reactors, Penalty, Reporting and recordkeeping requirements.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the Nuclear Waste Policy Act of 1982, and 5 U.S.C. 553, notice is hereby given that the NRC is proposing to revise 10 CFR Part 55 and to amend 10 CFR Part 50 to conform as follows:

1. 10 CFR Part 55 is revised to read as follows:

PART 55—OPERATORS' LICENSES

Subpart A—General Provisions

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55.1 Purpose.
55.2 Scope.
55.3 License requirements.
55.4 Definitions.
55.5 Communications.
55.6 Interpretations.
55.7 Additional requirements.
55.8 Information collection requirments: OMB approval. [Reserved]

Subpart B—Exemptions

55.11 Specific exemptions.
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Sec.
55.21 Medical examination.
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55.33 Disposition of an initial application.
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Subpart E—Written Examinations and Operating Tests

55.41 Written examination: Operators.
55.43 Written examination: Senior Operators and special senior operators
55.45 Operating tests.
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Subpart F—Licenses

55.51 Issuance of licenses.
55.53 Conditions of licenses.
55.55 Expiration.
55.57 Renewal of licenses.
55.59 Requalification.

Subpart G—Modification and Revocation of Licenses

55.61 Modification and revocation of licenses.

Subpart H—Enforcement

55.71 Violations.

Authority: Secs. 107, 161, 182 (sec. 55.31(b)), 234, 68 Stat. 939, 948, as amended, 83 Stat. 444, as amended (42 U.S.C. 2137, 2201, 2282); secs. 201, 202, 88 Stat. 1242, as amended, 1244 (42 U.S.C. 5841, 5842).

Section 55.61 also issued under secs. 186, 187, 68 Stat. 955 (42 U.S.C. 2236, 2237). Sections 55.41, 55.43, 55.45 and 55.59 also issued under sec. 306, Pub. L. 97–425, 96 Stat. 2262 (42 U.S.C. 10226).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273) §§ 55.3, 55.21, 55.49 and 55.53 are issued under sec. 161i, 68 Stat 949, as amended (42 U.S.C. 2201(i)); and §§ 55.23, 55.25 and 55.53(f) are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

Subpart A—General Provisions

§ 55.1 Purpose.

The regulations in this part (a) establish procedures and criteria for the issuance of licenses to operators, senior operators and special senior operators of facilities licensed pursuant to the Atomic Energy Act of 1954, as amended, or section 202 of the Energy Reorganization Act of 1974, as amended, and Part 50 of this chapter, and (b) provide for the terms and conditions upon which the Commission will issue these licenses.

§ 55.2 Scope.

The regulations in this part apply to—

(a) Any individual who manipulates the controls of any facility licensed pursuant to Part 50 of this chapter;

(b) Any individual who instructs an individual about the way to manipulate the controls of any facility licensed pursuant to Part 50 of this chapter, and

(c) Any individual designated by a facility licensee to be responsible for directing any licensed activity of a licensed operator.

§ 55.3 License requirements.

A person must be authorized by a license issued by the Commission to perform the function of an operator, a senior operator, or a special senior operator as defined in this part.

§ 55.4 Definitions.

As used in this part:

"Act" means the Atomic Energy Act of 1954, including any amendments to the Act.

"Commission" means the Nuclear Regulatory Commission or its duly authorized representatives.

"Controls" when used with respect to a nuclear reactor means apparatus and mechanisms the manipulation of which directly affects the reactivity or power level of the reactor. "Controls" when used with respect to any other facility means apparatus and mechanisms, the manipulation of which could affect the chemical, physical, metallurgical, or nuclear process of the facility in a manner that would affect protection of health and safety against radiation.

"Facility" means any production facility or utilization facility as defined in Part 50 of this chapter. In cases for which a license is issued for operation of two or more facilities, "facility" means all facilities identified in the license.

"Facility licensee" means an applicant for or holder of a license for a facility.

"Licensee" means individual licensed operator, senior operator or special senior operator.

"Manipulate a control" means to manipulate a control of a facility, direct an individual to manipulate a control, or instruct an individual how to manipulate a control.

"Operator" means any individual licensed under this part to manipulate a control of a facility.

"Plant-referenced simulator" means a simulator modeling the systems of the reference plant which the operator interfaces in the control room, including operating consoles, and which permits use of the reference plant's procedures. a plant-referenced simulator demonstrates expected plant response to operator input, and to normal, transient and accident conditions to which the simulator has been designed to respond.

"Reference plant" means the specific nuclear power plant and unit from which a simulation facility's control room configuration, system control arrangement and data base are derived.

"Senior operator" means any individual licensed under this part to direct the licensed activities of licensed operators.

"Simulation facility" means one or more of the following components, alone or in combination, used for the partial conduct of operating tests for operators, senior operators, special senior operators, and candidates: (1) The plant, (2) a plant-referenced simulator, (3) another simulation device.

"Special Senior Operator" means any individual who holds a license issued under this part which is limited to the following activities:

(1) Instruction on manipulation of the controls of a facility;

(2) Alteration of the core of a nuclear power unit, including fuel loading and transfer.

"United States", when used in a geographical sense, includes Puerto Rico and all territories and possesions of the United States.

§ 55.5 Communications.

(a) Except as provided under a regional licensing program identified in paragraph (b) of this section, any communication or report concerning the regulations in this part and any application filed under these regulations may be submitted to the Commission as follows:

(1) By mail addressed to—Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

(2) By delivery in person to the Commission offices at—

(i) 1717 H Street NW., Washington, D.C. or

(ii) 7920 Norfolk Avenue, Bethesda, Maryland.

(b) (1) The Commission has delegated to the Regional Administrators of Regions I, II, III, IV, and V authority and responsibility pursuant to the regulations in this part for the issuance and renewal of licenses for operators, senior operators and special senior operators of nuclear reactors licensed under 10 CFR Part 50 and located in these regions.

(2) Any application filed under the regulations in this part involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region I and any inquiry, communication, information, or report relating to matters subject to the regulations in this part and involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region I must be submitted by mail or in person to the Regional Administrator, Region I, U.S. Nuclear Regulatory Commission, 631 Park Avenue, King of Prussia, Pennsylvania 19406. The Regional Administrator of Region I or the Administrator's designee will transmit to the Director of Nuclear Reactor Regulation any matter that is not within the scope of the Regional Administrator's delegated authority.

(3) Any application filed under the regulations in this part involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region II and any inquiry, communication, information, or report relating to matters subject to the regulations in this part and involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region II must be submitted by mail or in person to the Regional Administrator, Region II, U.S. Nuclear Regulatory Commission, 101 Marietta Street, Suite 2900, Atlanta, Georgia 30303. The Regional Administrator of Region II or the Administrator's designee will transmit to the Director of Nuclear Reactor Regulation any matter that is not within the scope of the Regional Administrator's delegated authority.

(4) Any application filed under the regulations in this part involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region III and any inquiry, communication, information, or report relating to matters subject to the regulations in this part and involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region III must be submitted by mail or in person to the Regional Administrator, Region III, U.S. Nuclear Regulatory Commission, 799 Roosevelt Road, Glen Ellyn, Illinois 60137. The Regional Administrator of Region III, or the Administrator's designee, will transmit to the Director of Nuclear Reactor Regulation any matter that is not within the scope of the Regional Administrator's delegated authority.

(5) Any application filed under the regulations in this part involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region IV and any inquiry, communication, information, or report relating to matters subject to the regulations in this part and involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region IV must be submitted by mail or in person to the Regional Administrator, Region IV, U.S. Nuclear Regulatory Commission, 611 Ryan Plaza Drive,

Suite 1000, Arlington, Texas 76011. The Regional Administrator of Region IV or the Administrator's designee will transmit to the Director of Nuclear Reactor Regulation any matter that is not within the scope of the Regional Administrator's delegated authority.

(6) Any application filed under the regulations in this part involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region V and any inquiry, communication, information, or report relating to matters subject to the regulations in this part and involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region V must be submitted by mail or in person to the Regional Administrator, Region V, U.S. Nuclear Regulatory Commission, 1450 Maria Lane, Suite 210, Walnut Creek, California 94596. The Regional Administrator of Region V or the Administrator's designee will transmit to the Director of Nuclear Reactor Regulation any matter that is not within the scope of the Regional Administrator's delegated authority.

§ 55.6 Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

§ 55.7 Additional Requirements.

The Commission may, by rule, regulation, or order, impose upon any licensee such requirements, in addition to those established in the regulations in this part, as it deems appropriate or necessary to protect health and to minimize danger to life or property.

§ 55.8 Information collection requirements: OMB approval. [Reserved]

Subpart B—Exemptions

§ 55.11 Specific exemptions.

The Commission may, upon application by an interested person, or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property and are otherwise in the public interest.

§ 55.13 General exemptions.

The regulations in this part do not require a license for an individual who, under the direction and in the presence of a licensed operator or senior operator, manipulates the controls of—

(a) A research or training reactor as part of the individual's training as a student in a nuclear engineering course; or

(b) A facility as a part of the individual's training to qualify for an operator license under this part.

Subpart C—Medical Requirements

§ 55.21 Medical examination.

An applicant for a license shall have a medical examination by a licensed medical practitioner that meets the requirements of § 55.33(a)(1). A licensee shall have a medical examination every two years.

§ 55.23 Certification.

An authorized representative of the facility licensee shall complete and sign NRC Form 396, "Certification of Medical Examination by Facility Licensee," available from Publication Services Section, Document Management Branch, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555 and submit it to the appropriate Regional Administrator as specified in § 55.5(b).

(a) NRC Form 396 shall state that a licensed medical practitioner has—

(1) conducted the medical examination of the applicant as required in § 55.21; and

(2) determined that the applicant's medical condition and general health are not such as might cause operational errors endangering public health and safety.

(b) When the certification requests a conditional license based on medical evidence, the medical evidence shall be submitted to the Commission in full detail and the Commission will make a determination in accordance with § 55.33.

§ 55.25 Incapacitation due to disability or illness.

If, during the term of the license, the licensee develops epilepsy, diabetes, hypertension, cardiac disease, fainting spells, defective hearing or vision, or any other physical or mental condition that might cause impaired judgment or motor coordination, the licensee shall immediately cease licensed activities and notify the Commission within 30 days. Before resumption of licensed duties, the facility licensee must provide medical certification to the Commission of the individual's ability to perform licensed operator duties. The certification shall be on Form 396 (as described in § 55.23) and shall conform with § 55.33(a)(1)(ii).

§ 55.27 Documentation.

The results of medical qualifications data, current test results and each operator's, senior operator's, or special senior operator's medical history must be documented and maintained by the facility licensee and provided to the Commission upon request. The facility licensee shall retain this documentation while an individual performs the functions of an operator, senior operator, or special senior operator and may dispose of it two years after that individual ceases to perform that function.

Subpart D—Applications

§ 55.31 How to apply.

(a) The applicant shall—

(1) Complete NRC Form 398, "Personal Qualification Statement—Licensee," available from Publication Services Section, Document Management Branch, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555;

(2) File an original and two copies of NRC Form 398, together with the information required in paragraphs (a)(3), (4) and (5) of this section, with the appropriate Regional Administrator;

(3) Submit a written request from an authorized representative of the facility licensee by which the applicant will be employed that the operating test be administered to the applicant;

(4) Provide evidence that the applicant has learned to operate the appropriate controls competently and safely and of the facility licensee's need for an operator, a senior operator, or a special senior operator to perform assigned duties. An authorized representative of the facility licensee may certify this evidence on NRC Form 398. This certification must include details on courses of instruction administered by the facility licensee and describe the nature of the training received at the facility, and for reactors, the startup and shutdown experience received; and

(5) Provide certification by the facility licensee of medical condition and general health on NRC Form 396, to comply with §§ 55.21, 55.23 and 55.33(a)(1). Special senior operators not involved in the manipulation of controls are not required to provide this certification.

(b) The Commission may at any time after the application has been filed, and before the license has expired, require further information under oath or affirmation in order to enable it to determine whether to grant or deny the application or whether to revoke, modify, or suspend the license.

(c) An applicant whose application has been denied because of a medical

condition or genreal health may submit a further medical report at any time as a supplement to the application.

(d) Each application and statement must contain complete and accurate disclosure as to all matters required to be disclosed. The applicant must sign statements, other than the matters required by paragraphs (a) (3), (4), and (5) of this section.

§ 55.33 Disposition of an initial application.

(a) *Requirements for the approval of an initial application.* The Commission will approve an initial application for a license pursuant to the regulations in this part, if it finds that—

(1) *Health.* The applicant's medical condition and general health are not such as might adversely affect the performance of assigned operator job duties or cause operational errors endangering public health and safety. The Commission will base its finding upon the certification by the facility licensee as detailed in § 55.23.

(i) A medical diagosis or medical history of epilepsy, diabetes, hypertension, cardiac disease, fainting spells, defective hearing or vision, or any other physical or mental condition that might cause impaired judgment or motor coordination may constitute sufficient cause for denial of an application.

(ii) If a condition specified in paragraph (a)(1)(i) of this section exists, the facility licensee shall provide medical evidence and certify to the Commission that the condition can be controlled with proper medication to the extent that the individual will not lapse into coma or unconscious state or be unable to exercise good judgment while performing assigned operator job duties.

(2) *Written examination and operatiang test.* The applicant has passed the requisite written examination and operating test in accordance with §§ 55.41 or 55.43 and 55.45. These examinations and tests determine whether the applicant for an operator's license has learned to operate a facility competently and safely, and additionally, in the case of a senior operator, whether the applicant has learned to direct the licensed activities of licensed operators competently and safely.

In the case of a special senior operator, the written examination or operating test, or both will be administered to determine whether the applicant has learned to perform the functions authorized by the special senior operator license.

(3) *License applicability.* The applicant's services as a licensed operator, senior operator or special senior operator will be utilized on the facility for which the applicant seeks a license.

(b) *Conditional license.* If an applicant's vision, hearing, and general medical condition do not meet the minimum standards normally considered necessary, the Commission may approve the application and include conditions in the license to accommodate the medical defect. The Commission will consider the recommendations and supporting evidence of the facility licensee and of the examining physician (provided on NRC Form 396) in arriving at its decision.

§ 55.35 Re-applications.

(a) An applicant whose application for a license has been denied because of failure to pass the written examination or operating test, or both, may file a new application two months after the date of denial. The application must be submitted on NRC Form 398 and include a statement signed by an authorized representative of the facility licensee by whom the applicant will be employed that states in detail the extent of the applicant's additional training since the denial and certifies that the applicant is ready for re-examination. An applicant may file a third application six months after the date of denial of the second application, and may file further successive applications two years after the date of denial of each prior application. Each successive application must be submitted on NRC Form 398 and include a statement of additional training.

(b) An applicant who has passed either the written examination or operating test and failed the other may request in a new application on NRC Form 398 to be excused from re-examination on the portions of the examination or test which the applicant has passed. The Commission may in its discretion grant the request, if it determines that sufficient justification is presented under all the circumstances.

Subpart E—Written Examinations and Operating Tests

§ 55.41 Written examination: Operators.

(a) *Content.* The written examination for an operator will contain a representative selection of questions on the knowledge, skills, and abilities needed to perform licensed operator job duties. The knowledge, skills and abilities will be identified in part from information in the Final Safety Analysis Report, operating manuals, facility license and license amendments, Licensee Event Reports, the learning objectives derived from a systematic analysis performed by each facility licensee and contained in its training program, and other materials requested from the facility licensee by the Commission.

(b) *Implementation.* The written examination for an operator for a facility will sample the following items, to the extent applicable to the facility.—

(1) Fundamentals of reactor theory, including fission process, neutron multiplication, source effects, control rod effects, criticality indications, reactivity coefficients, and poison effects.

(2) General design features of the core, including core structure, fuel elements, control rods, core instrumentation, and coolant flow.

(3) Mechanical components and design features of the reactor primary system.

(4) Secondary coolant and auxiliary systems that affect the facility.

(5) Facility operating characteristics during steady state and transient conditions, including coolant chemistry, causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons for these operating characteristics.

(6) Design, components, and functions of reactivity control mechanisms and instrumentation.

(7) Design, components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

(8) Components, capacity, and functions of reserve and emergency systems.

(9) Shielding, isolation, and containment design features, including access limitations.

(10) Administrative, normal, abnormal and emergency operating procedures for the facility.

(11) Purpose and operation of radiation monitoring systems, including alarms and survey equipment.

(12) Radiological safety principles and procedures.

(13) Procedures and equipment available for handling and disposal of radioactive materials and effluents.

(14) Principles of heat transfer thermodynamics and fluid mechanics.

§ 55.43 Written examination: Senior operators and special operators.

(a) *Content.* The written examination for a senior operator will contain a representative selection of questions on the knowledge, skills, and abilities

needed to perform licensed senior operator or special senior operator job duties. The knowledge, skills and abilities will be identified in part from information in the Final Safety Analysis Report, operating manuals, facility license and license amendments, Licensee Event Reports, the learning objectives derived from a systematic analysis performed by each facility licensee and contained in its training program, and other materials requested from the facility licensee by the Commission.

(b) *Implementation.* The written examination for a senior operator for a facility will sample the following items and on the items specified in § 55.41, to the extent applicable to the facility—

(1) Conditions and limitations in the facility license.

(2) Facility operating limitations in the technical specifications and their bases.

(3) Facility licensee procedures required to obtain authority for design and operating changes in the facility.

(4) Radiation hazards that may arise during normal and abnormal situations including maintenance activities and various contamination conditions.

(5) Assessment of facility conditions and selection of appropriate procedures during normal, abnormal and emergency situations.

(6) Procedures and limitations involved in initial core loading, alterations in core configuration, control rod programming, and determination of various internal and external effects on core reactivity.

(7) Fuel handling facilities and procedures.

In the case of a special senior opeator, the written examination will be limited to items in § 55.41 and in § 55.43 applicable to the purpose of the license.

§ 55.45 Operating tests.

(a) *Content.* The operating tests administered to applicants for operator and senior operator licenses in accordance with paragraph (b)(1) of this section are generally similar in scope. The scope of operating tests for special senior operators will be determined as appropriate to the purpose of the license. The content will be identified, in part, from information in the Final Safety Analysis Report, operating manuals, facility license and license amendments, Licensee Event Reports, learning objectives derived from a systematic analysis performed by each facility licensee and contained in its training program, and other materials requested from the facility licensee by the Commission. The operating test, to the extent applicable to the facility, requires the applicant to demonstrate and understanding of and the ability to perform the actions necessary to accomplish a comprehensive sample of the following:

(1) Perform pre-start-up procedures for the facility, including operation of those controls associated with plant equipment that could affect reactivity.

(2) Manipulate the console controls as required to operate the facility between shutdown and designated power levels.

(3) Identify annunciators and condition-indicating signals and perform appropriate remedial action where appropriate.

(4) Identify the instrumentation systems and the significance of facility instrument readings.

(5) Observe and safely control the operating behavior characteristics of the facility.

(6) Perform control manipulations required to obtain desired operating results during normal, abnormal, and emergency situations.

(7) Safely operate the facility's heat removal systems, including primary coolant, emergency coolant, and decay heat removal systems, and identify the relation of the proper operation of these systems to the operation of the facility.

(8) Safely operate the facility's auxiliary and emergency systems, including operation of those controls associated with plant equipment that could affect reactivity or the release of radioactive materials to the environment.

(9) Demonstrate or describe the use and function of the facility's radiation monitoring systems, including fixed radiation monitors and alarms, portable survey instruments, and personnel monitoring equipment.

(10) Demonstrate knowledge of and ability to perform as low as reasonably achievable (ALARA) procedures to reduce excessive levels of radiation and to guard against personnel exposure.

(11) Demonstrate knowledge of the emergency plan for the facility, including the operator's or senior operator's responsibility to decide whether the plan should be executed and the duties under the plan assigned.

(12) Demonstrate willingness and ability to assume the responsibility associated with the safe operation of the facility.

(13) Demonstrate team-dependent and time-critical behaviors associated with safe operation of the facility.

(b) *Implementation.* (1) Administration—The operating tests will be administered in a plant walkthrough and in a simulation facility, as defined in § 55.4, which the Commission has approved for use.

(2) Schedule—Within 120 days after the effective date of this part, each facility licensee shall propose to the Commission, for review and approval, a plan by which the simulation facility will be developed and an application submitted for its use. In no case shall the non-plant walkthrough portion of the operating test be administered on other than an approved simulation facility after three years from the effective date of this part.

(3) Application for, and Review and Approval of, Simulation Facilities—

(i) Not later than 180 days prior to the date when the facility licensee seeks approval for use of a simulation facility, it shall submit to the Commission an initial application for the simulation facility, in accordance with the plan prepared pursuant to paragraph (b)(2) of this section and approved by the Commission. This initial application shall include as a minimum:

(A) A complete description of the simulation facility proposed for use and, if applicable, a statement identifying which of the components of the simulation facility are to be used for each part of the operating test.

(B) A complete description and documentation of the performance tests conducted as part of this application, and the results of such tests.

(C) A detailed schedule for the conduct of 25 percent of all performance tests per year for the subsequent four years.

(ii) After Commission review of the initial application, it will either approve the simulation facility for use, which approval will be valid for four years, except as described in paragraph (b)(3)(xii) of this section, or it will inform the facility licensee of reasons for its refusal to grant approval.

(iii) The Commission will approve a simulation facility if it finds that it and its proposed use are appropriate for the facility licensee's reference plant.

(iv) If the facility licensee initially fails to obtain approval for its simulation facility, the Commission will continue to conduct operating tests for the facility licensee's reference plant, as defined in § 55.4, in the same manner in which such tests were conducted before its submittal of its initial application. In no case shall this paragraph affect compliance with paragraph (b)(2) of this section.

(v) Annually, not later than 60 days after the anniversary of its submittal of the initial application in accordance with paragraph (b)(3)(i) of this section, the facility licensee shall submit a report to the Commission which states that, to the best of its knowledge, its simulation

facility remains appropriate for use. This report must include, minimum:

(A) Any changes proposed to be made to the simulation facility, its components or its use, or any such changes made since the last report or application.

(B) Any changes proposed to be made to the reference plant, if such changes would require changes to the simulation facility, or any such changes made since the last report or application.

(C)(*1*) A statement that the applicable performance tests specified in the last application have been conducted, a statement of the results of these tests and, if required by these results, a description of changes required to be made to the simulation facility and a schedule for the implementation of these changes.

(*2*) The data collected for use in preparation of the annual report, including documentation of the performance tests conducted and the results of such tests, must be maintained by the facility licensee, and made available to the Commission upon request in accordance with paragraph (b)(3)(xii) of this section, until the Commission has approved the simulation facility in accordance with paragraph (b)(3)(viii) of this section. The annual report, as specified in this paragraph, need not be submitted on the fourth anniversary of an initial or subsequent application.

(vi) Not less than 180 nor more than 210 days before the expiration of a facility licensee's existing approval, it shall inform the Commission if it intends to apply for approval for a subsequent four year period.

(vii) If the facility licensee has stated its intention to apply for subsequent approval in accordance with paragraph (b)(3)(vi) of this section, it shall, not less than 120 days before the expiration of its existing approval, apply for subsequent approval. The application for subsequent approval must include, as a minimum:

(A) Any changes proposed to be made to the simulation facility, its components or its use, or any of these change made since the last report or application.

(B) Any changes proposed to be made to the reference plant if these changes would require changes to the simulation facility, or any of these changes made since the last report or application.

(C) A complete description and documentation of all performance tests conducted since the last application, the results of such tests and, if required by those results, a description of changes required to be made to the simulation facility and a schedule for the implementation of these changes.

(D) A detailed schedule for the conduct of 25 percent of all performance tests per year for the subsequent four years.

(viii) After Commission review of the application for subsequent approval, it will either approve the simulation facility, which approval will be valid for four years, except as described in parapgraph (b)(3)(xii) of this section, or it will inform the facility licensee of reasons for its refusal to grant approval.

(ix) The Commission will approve a simulation facility if it finds that it and its proposed use are appropriate for the facility licensee's reference plant.

(x) If the facility licensee subsequently fails to obtain approval for its simulation facility, of if the Commission withdraws its approval in accordance with paragraph (b)(3)(xii) of this section, the Commission will cease to conduct operating tests for that facility licensee's reference plant.

(xi) If the Commission ceases to conduct operating tests for a facility licensee's reference plant, the facility licensee may again apply for approval at any time in accordance with this section.

(xii) The Commission may, at any time after a facility licensee has submitted an initial application for approval, conduct an inspection of the simulation facility and/or audit any of the documents and records associated with the application, operation, and performance of the simulation facility, including performance tests, and/or may cause any of these performance tests to be conducted for its inspection and review. As a result of these inspection and/or audit, the Commission may withdraw its approval of the simulation facility for good cause provided that it informs the facility licensee of the reasons for these withdrawal of approval.

§ 55.47 Waiver of examination and test requirements.

(a) On application, the Commission may waive any or all of the requirements for a written examination and operating test, if it finds that the applicant—

(1) Has had extensive actual operating experience at a comparable facility, as determined by the Commission, within two years prior to the date of application;

(2) Has discharged his or her responsibilities competently and safely and is capable of continuing to do so; and

(3) Has learned the operating procedures for and is qualified to operate competently and safely the facility designated in the application.

(b) The Commission may accept as proof of the applicant's past performance a certification of an authorized representative of the facility licensee or of a holder of an authorization by which the applicant was previously employed. The certification must contain a description of the applicant's operating experience, including an approximate number of hours the applicant operated the controls of the facility, the duties performed, and the extent of the applicant's responsibility.

(c) The Commission may accept as proof of the applicant's current qualifications a certification of an authorized representative of the facility licensee or of a holder of an authorization where the applicant's services will be utilized.

§ 55.49 Integrity of examinations and tests.

Applicants or licensees shall not engage in any activity that compromises the integrity of any application, test or examination required by this part.

Subpart F—Licenses

§ 55.51 Issuance of Licenses.

(a) *Operator and senior operator licenses.* If the Commission determines that an applicant for an operator license, a senior operator license or a special senior operator license meets the requirements of the Act and its regulations, it will issue a license in the form and containing any conditions and limitations it considers appropriate and necessary.

(b) *Special senior operator licenses.* The Commission may issue a special senior operator license. A special senior operator license is subject to the provisions of § 55.53 (a), (b), (c), (d), (f), (g), and (i).

§ 55.53 Conditions of licenses.

Each license contains and is subject to the following conditions whether stated in the license or not:

(a) Neither the license nor any right under the license shall be assigned or otherwise transferred.

(b) The license is limited to the facility for which it is issued.

(c) The license is limited to those controls of the facility specified in the license.

(d) The license is subject to, and the licensee shall observe, all applicable rules, regulations, and orders of the Commission.

(e) If the Commission determines that a licensee has not been actively performing the functions of an operator or senior operator for a period of four

months or longer, the license shall not be permitted to resume activities authorized by a license issued under this Part, until the licensee demonstrates to the Commission satisfactory knowledge and understanding of facility operation and administration. The Commission may accept as evidence for this requirement a certification by an authorized representative of the facility licensee by which the licensee has been employed.

(f) Unless the facility licensee has notified the Commission of a change of status under § 50.74 of this chapter, the licensee shall notify the Commission within 30 days of the following:

(1) Permanent reassignment from the position for which the facility licensee has certified the need for the licensed operator, senior operator, or special senior operator under § 55.33(a)(3);

(2) Termination by the facility licensee;

(3) Disability or illness as described in § 55.25; or

(4) Any other condition, including conviction of a crime, which affects or could affect the performance of operator, senior operator or special senior operator duties.

(g) The licensee shall complete an annual requalification program as described by § 55.59.

(h) The licensee shall have a biennial medical examination.

(i) The licensee shall comply with any other conditions that the Commission may impose to protect health or to minimize danger to life or property.

§ 55.55 Expiration.

(a) Each operator license, senior operator license, and special senior operator license shall expire five years after the date of issuance, upon termination, or upon determination by the facility licensee that the licensed individual no longer needs to maintain a license.

(b) If a licensee files an application for renewal or an upgrade of an existing license on NRC Form 398 at least 30 days before the expiration of the existing license, it shall not expire until disposition of the application for renewal or for an upgraded license has been finally determined by the Commission. Filing by mail or telegram will be deemed to be complete at the time the application is deposited in the mail or with a telegraph company.

§ 55.57 Renewal of licenses.

(a) The applicant for renewal of a license shall—

(1) Complete and sign NRC Form 398 and include the number of the license for which renewal is sought.

(2) File an original and two copies of NRC Form 398 with the appropriate Regional Administrator specified in § 55.5(b).

(3) Provide written evidence of the applicant's experience under the existing license, including for operator, senior operators and special senior operators, if appropriate, the approximate number of hours that the licensee has operated the facility;

(4) Provide a statement by an authorized representative of the facility licensee that during the effective term of the current license the applicant has satisfactorily completed the annual requalification program for the facility for which operator, senior operator or special senior operator license renewal is sought.

(5) Provides evidence that the applicant has discharged the license responsibilities competently and safety. The Commission may accept as evidence of the applicant's having met this requirement a certificate of an authorized representative of the facility licensee or holder of an authorization by which the licensee has been employed.

(b) The license will be renewed if the Commissioin finds that—

(1) The medical condition and the general health of the licensee continue to be sufficient so as not to cause operational errors that endanger public health and safety. The Commission will base this finding upon the certification by the facility licensee as described in § 55.23.

(2) The licensee has—

(i) Been actively and extensively engaged as an operator or as a senior operator under the existing license, has discharged the responsibilities of an operator or senior operator competently and safely, and is capable of continuing to do so.

(ii) Successfully completed an annual requalification program that has been reviewed and approved by the commission as required by § 55.59.

(iii) Passed the annual requalification examinations and operating tests as required by § 55.59.

(3) There is a continued need for a licensee to operate, or for a senior operator to direct operators, or for a special senior operator to perform assigned duties at the facility designated in the application.

(4) The past performance of the licensee has been satisfactory to the Commission.

§ 55.59 Requalification

(a) *Annual requalification requirements.* Each licensee shall annually—

(1) Successfully complete a requalification program developed by the facility licensee that has been reviewed and approved by the Commission.

(2) Pass a requalification examination and an operating test administered by the Commission. In lieu of the requalification examination and operating tests, the Commission may accept certification by the facility licensee that the licensee has successfully completed the approved requalification program identified in paragraph (a)(1) of this section.

(b) *Additional training.* If the requirements of paragraphs (a), (1) and (2) of this section are not met, the Commission may require the licensee to complete additional training and to submit evidence to the Commission of successful completion of this training.

(c) *Requalification program requirements.* A facility licensee shall have a requalification program reviewed and approved by the Commission. The requalification program shall be developed using a systems approach to training or the following requirements:

(1) *Schedule.* The requalification program must be conducted for a continuous period not to exceed two years, and upon conclusion must be promptly followed, pursuant to a continuous schedule, by successive requalification programs.

(2) *Lectures.* The requalification program must include preplanned lectures on a regular and continuing basis throughout the license period in those areas where annual operator and senior operator written examinations indicate that emphasis in scope and depth of coverage is needed in the following subjects:

(i) Theory and principles of operation.

(ii) General and specific plant operating characteristics.

(iii) Plant instrumentation and control systems.

(iv) Plant protection systems.

(v) Engineered safety systems.

(vi) Normal, abnormal, and emergency operating procedures.

(vii) Radiation control and safety.

(viii) Technical specifications.

(ix) Applicable portions of Title 10, Chapter I, Code of Federal Regulations.

(3) *On-the-job training.* The requalification program must include on-the-job training so that:

(i) Each licensed operator of a production or utilization facility manipulates the plant controls and each licensed senior operator either manipulates the controls or directs the activities of individuals during plant control manipulations during the term of

the licensed operator's or senior operator's license. For reactor operators and senior operators, these manipulations must consist of the following control manipulations and plant evolutions where applicable to the plant design. Items (A) through (L) in this paragraph shall be performed annually; all other items shall be performed on a two-year cycle. However, the requalification programs shall contain a commitment that each individual shall perform or participate in a combination of reactivity control manipulations based on the availability of plant equipment and systems. Those control manipulations which are not performed at the plant may be performed on a simulator. The use of the Technical Specifications should be maximized during the simulator control manipulations. Senior operator licensees are credited with these activities if they direct or evaluate control manipulations as they are performed.

(A) Plant or reactor startups to include a range that reactivity feedback from nuclear heat addition is noticable and heatup rate is established.

(B) Plant shutdown.

(C) Manual control of steam generators or feedwater or both during startup and shutdown.

(D) Boration and or dilution during power operation.

(E) Any significant (>10 percent) power changes in manual rod control or recirculation flow.

(F) Any reactor power change of 10 percent or greater where load change is performed with load limit control or where flux, temperature, or speed control is on manual (for HTGR).

(G) Loss of coolant, including:

(*1*) Significant PWR steam generator leaks

(*2*) Inside and outside primary containment

(*3*) Large and small, including leak-rate determination

(*4*) Saturated Reactor Coolant response (PWR).

(H) Loss of instrument air (if simulated plant specific).

(I) Loss of electrical power (and/or degraded power sources).

(J) Loss of core coolant flow/natural circulation.

(K) Loss of condenser vacuum.

(L) Loss of service water if required for safety.

(M) Loss of shutdown cooling.

(N) Loss of component cooling system or cooling to an individual component.

(O) Loss of normal feedwater or normal feedwater system failure.

(P) Loss of feedwater (normal and emergency).

(Q) Loss of protective system channel.

(R) Mispositioned control rod or rods (or rod drops).

(S) Inability to drive control rods.

(T) Conditions requiring use of emergency boration or standby liquid control system.

(U) Fuel cladding failure or high activity in reactor coolant or offgas.

(V) Turbine or generator trip.

(W) Malfunction of an automatic control system which affects reactivity.

(X) Malfunction of reactor coolant pressure/volume control system.

(Y) Reactor trip.

(Z) Main steam line break (inside or outside containment).

(AA) A nuclear instrumentation failure.

(ii) Each licensed operator and senior operator has demonstrated satisfactory understanding of the operation of all apparatus and mechanisms and knows the operating procedures in each area for which the operator or senior operator is licensed.

(iii) Each licensed operator and senior operator is cognizant of facility design changes, procedures changes, and facility license changes.

(iv) Each licensed operator and senior operator reviews the contents of all abnormal and emergency procedures on a regularly scheduled basis.

(v) A simulator may be used in meeting the requirements of paragraphs (c)(3)(i) and (c)(3)(ii) of this section, if it reproduces the general operating characteristics of the facility involved and the arrangement of the instrumentation and controls of the simulator is similar to that of the facility involved. If the simulator or simulation device is used to administer operating tests for a facility, as provided in § 55.45(b)(1), the device approved to meet the requirements of § 55.45(b)(1) must be used for credit to be given for meeting the requirements of § 55.59(c)(3)(i) (G through AA).

(4) *Evalution.* The requalification program must include:

(i) Annual written examinations which determine areas in which retraining is needed to upgrade licensed operator and senior operator knowledge.

(ii) Written examinations which determine licensed operators' and senior operators' knowledge of subjects covered in the requalification program and provide a basis for evaluating their knowledge of abnormal and emergency procedures.

(iii) Systematic observation and evaluation of the performance and competency of licensed operators and senior operators by supervisors and/or training staff members, including evaluation of actions taken or to be taken during actual simulated abnormal and emergency procedures.

(iv) Simulation of emergency or abnormal conditions that may be accomplished by using the control panel of the facility involved or by using a simulator. Where the control panel of the facility is used for simulation, the actions taken or to be taken for the emergency or abnormal condition shall be discussed; actual manipulation of the plant controls is not required. If a simulator is used in meeting the requirements of paragraph (c)(4)(iii) of this section, it shall accurately reproduce the operating characteristics of the facility involved and the arrangement of the instrumentation and controls of the simulator shall closely parallel that of the facility involved. After the provisions of § 55.45(b)(1) have been implemented at a facility, the approved device must be used to comply with this paragraph.

(v) Provisions for each licensed operator and senior operator to participate in an accelerated requalification program where performance evaluations conducted pursuant to paragraphs (c)(3)(i) through (iv) of this section clearly indicate the need.

(5) *Records.* (i) The facility licensee shall maintain records documenting the participation of each licensed operator and senior operator in the requalification program. The records must contain copies of written examinations administered, the answers given by the licensee, and the results of evaluations and documentation of any additional training administered in areas in which an operator or senior operator has exhibited deficiencies. The facility licensee shall retain these records until the operator's or senior operator's license is renewed.

(ii) Each record required by this part must be legible throughout the retention period specified by each Commission regulation. The record may be the original or a reproduced copy or a microform provided that the copy or microform is authenticated by authorized personnel and that the microform is capable of producing a clear copy throughout the required retention period.

(iii) If there is a conflict between the Commission's regulations in this part, and any license condition, or other written Commission approval or authorization pertaining to the retention period for the same type of record, the retention period specified for these records by the regulations in this part shall apply unless the Commission, pursuant to § 55.11, grants a specific

exemption from this record retention requirement.

(6) *Alternative training programs.* The requirements of this section may be met by requalification programs conducted by persons other than the facility licensee if the requalification programs are similar to the program described in paragraphs (c) (1) through (5) of this section and the alternative program has been approved by the Commission.

(7) *Applicability to research and test reactors and non-reactor facilities.* To accommodate specialized modes of operation and differences in control, equipment, and operator skills and knowledge, the requalification program for each licensed operator and senior operator of a research reactor or test reactor or of a non-reactor facility shall conform generally but need not be identical to the requalification program outlined in paragraphs (c) (1) through (6) of this section. Significant deviations from the requirements of paragraphs (c) (1) through (6) of this section will be permitted only if supported by written justification and approved by the Commission.

Subpart G—Modification and Revocation of Licenses

§ 55.61 Modification and revocation of licenses.

(a) The terms and conditions of all licenses are subject to amendment, revision, or modification by reason of rules, regulations, or orders issued in accordance with the Act or any amendments thereto.

(b) Any license may be revoked, suspended, or modified, in whole or in part—

(1) For any material false statement in the application or any statement of fact required under section 182 of the Act,

(2) Because of conditions revealed by the application or statement of fact or any report, record, inspection or other means that would warrant the Commission to refuse to grant a license on an original application,

(3) For willful violation of, or failure to observe any of the terms and conditions of the Act, or the license, or of any rule, regulation, or order of the Commission, or

(4) Any conduct determined by the Commission to be a hazard to safe operation of the facility.

Subpart H—Enforcement

§ 55.71 Violations.

(a) An injunction or other court order may be obtained prohibiting any violation of any provision of—

(1) The Atomic Energy Act of 1954, as amended;

(2) Title II of the Energy Reorganization Act of 1974, as amended; or

(3) Any regulation or order issued under these Acts.

(b) A court order may be obtained for the payment of a civil penalty imposed under section 234 of the Atomic Energy Act for violation of—

(1) Sections 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, or 109 of the Atomic Energy Act;

(2) Section 206 of the Energy Reorganization Act of 1974;

(3) Any rule, regulation, or order issued under these Acts;

(4) Any term, condition, or limitation of any license issued under these Acts; or

(5) For any violation for which a license may be revoked under section 186 of the Atomic Energy Act.

(c) Any person who willfully violates any provision of the Atomic Energy Act or any regulation issued under the Act, including the regulations in this Part, may be guilty of a crime and, upon conviction, may be punished by fine or imprisonment, or both, as provided by law.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

2. The authority citation for Part 50 continues to read as follows:

Authority: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, 202, 206, 88 Stat. 1242, 1244, 1246, as amended (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Section 50.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Sections 50.57(d), 50.58, 50.91, and 50.92 also issued under Pub. L. 97–415, 96 Stat. 2071, 2073 (42 U.S.C. 2133, 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939, (42 U.S.C. 2152). Sections 50.80–50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Sections 50–100–50.102 also issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10(a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10(b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, 50.73, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

3. Immediately following § 50.73, "Licensee Event Report System," a new § 50.74 is added as a conforming amendment to read as follows:

§ 50.74 Notification of change in operator, senior operator or special senior operator status.

Each licensee shall notify the Commission in accordance with § 50.4 of this chapter within 30 days of the following in regard to a licensed operator, senior operator or special senior operator:

(a) Permanent reassignment from the position for which the licensee has certified the need for a licensed operator or senior operator under § 55.33(a)(3) of this chapter;

(b) Termination of any operator, senior operator or special senior operator;

(c) Disability or illness as described in § 55.25 of this chapter; or

(d) Any other condition, including conviction of a crime, which affects or could affect the performance of an operator's, senior operator's or special senior operator's duties.

Dated at Washington, DC, this 16th day of November 1984.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

49 FR 47034
Published 11/30/84
Comment period expires 1/29/85.

Revision of Backfitting Process for Power Reactors

See Part 2 Proposed Rule Making

49 FR 49640
Published 12/21/84
Comment period extended to 2/27/85.

10 CFR Part 50

Emergency Planning and Preparedness for Production and Utilization Facilities

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Commission has ruled in previous adjudications that its regulations do not require the consideration of potential impacts of earthquakes on emergency planning for nuclear reactor sites. The Commission now proposes to provide explicitly through amendment of its regulations in 10 CFR Part 50 that such consideration need not be given. Pending completion of this rulemaking, the interpretation of its rules set out in the adjudications remains in effect. It is not anticipated that this amendment will have significant impact on licensees, State, or local governments or on NRC or FEMA.

DATES: Comment period expires January 22, 1985. Comments received after this date will be considered if it is practical to do so, but assurance of consideration can be given only for comments received on or before this date.

ADDRESSES: Mail comments to: Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, ATTN: Docketing and Service Branch. Deliver comments to: Room 1121, 1717 H Street NW., Washington, DC between 8:15 a.m. and 5:00 p.m. weekdays. Copies of comments received may be examined at the NRC Public Document Room, 1717 H Street NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Michael T. Jamgochian, Division of Risk Analysis and Operations, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 443-7615.

SUPPLEMENTARY INFORMATION:

Background

On December 8, 1981, the Commission ruled in a then pending adjudication that its emergency planning regulations do not require consideration of potential earthquake effects on emergency plans for nuclear power reactors. *In the Matter of Southern California Edison Company, et al.* (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-81-33, 14 NRC 1091 (1981). In so ruling the Commission stated:

> The Commission will consider on a generic basis whether regulations should be changed to address the potential impacts of a severe earthquake on emergency planning. For the interim, the proximate occurrence of an accidental radiological release and an earthquake that could disrupt normal emergency planning appears sufficiently unlikely that consideration in individual licensing proceedings pending generic consideration of the matter is not warranted 14 NRC at 1092.

The Commission recently affirmed this position in the Diablo Canyon proceeding. *In the Matter of Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-84-12, 20 NRC——(August 10, 1984), petition for review in *San Luis Obispo Mothers for Peace* v. *NRC* (DC Cir. No. 84-1410). In this decision the Commission stated that it would initiate rulemaking "to address whether the potential for seismic impacts on emergency planning is a significant enough concern for large portions of the nation to warrant the amendment of the regulations to specifically consider those impacts. The chief focus of the rulemaking will be to obtain additional information to determine whether, in spite of current indications to the contrary, cost-effective reductions in overall risk may be obtained by the explicit consideration of severe earthquakes in emergency response planning." Slip Opinion at 9.

It should be noted that the Federal Emergency Management Agency (FEMA) reviews offsite radiological emergency planning and preparedness to insure the adequacy of Federal, State, and local capabilities in such areas as emergency organization, alert and notification, communications, measures to protect the public, accident assessment, public education and information, and medical support. Detailed, specific assessment of potential earthquake consequences and response are not part of this process related to radiological emergencies. Also, FEMA has coordinated planning for the Federal response to radiological emergencies including commercial nuclear power plant accidents. These efforts have resulted in FEMA publishing the Federal Radiological Emergency Response Plan in the **Federal Register** (49 FR 35896) on September 12, 1984. In addition, FEMA has an active program of earthquake preparedness which includes hazards and vulnerability analysis, estimates of damage and casualties, planning for Federal response to a major earthquake, and assistance to State and local governments in their earthquake planning and preparedness activities. FEMA believes that all of these activities are sufficiently flexible to complement each other in preparing for an event that may require a concurrent response to a major earthquake and a serious accident at a nuclear power plant.

For general background on emergency planning at nuclear facilities, the public is referred to NUREG-0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light Water Nuclear Power Plants," and NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of

Nuclear Power Plant."[1] The latter document, developed jointly by the NRC and FEMA, forms the basis for both NRC and FEMA regulations on emergency planning at nuclear power facilities. Also available for public inspection are the complete case records for the *San Onofre* and *Diablo Canyon* proceedings, both of which deal specifically with the earthquake/emergency planning interface.

The Commission, in its review of the record and consideration of arguments in the *Diablo Canyon* proceeding, reached the view that its previous *San Onofre* holding was correct, i.e., that the potential impact of earthquakes on emergency plans need not be considered. The rationale for this holding was stated in *Diablo Canyon* (Slip Opinion at 4–6), and may be summarized in part as follows:

> . . . [T]he seismic design of a nuclear power plant was reviewed to render extremely small the probability that . . . an earthquake [SSE] would result in a radiologic release . . . [For] those risk-dominant earthquakes which cause very severe damage to both the plant and the offsite area, emergency response would have marginal benefit because of its impairment by offsite damage . . . Specific consideration has been given in this case to the effects of other relatively frequent natural phenomena. The evidence includes the capability of the emergency plan to respond to disruptions in communications networks and evacuation routes as a result of fog, severe storms and heavy rain. In the extreme, these phenomena are capable of resulting in area-wide disruptions similar to some of the disruptions which may result from an earthquake . . . Thus, while no explicit consideration has been given to disruptions caused by earthquakes, the emergency plans do have considerable flexibility to handle the disruptions caused by various natural phenomena which occur with far greater frequency than do damaging earthquakes, and this implicitly includes some flexibility to handle disruptions from earthquakes as well.

Although the Commission's remarks were directed to the Diablo Canyon emergency plan, all nuclear power rector emergency plans do address the contingency that emergency actions may need to be taken under less-than-ideal conditions and with less-than-maximum emergency response capabilities.

Nuclear power plants are required to be designed to safely shut down for all earthquakes up to and including the "Safe Shutdown Earthquake," or SSE. *See* 10 CFR Part 50, Appendix A. General Design Criterion 2; 10 CFR Part 100, Appendix A. Accordingly, the probability of earthquakes large enough to cause major onsite damage that would result in a significant radiological release from the plant is low, and for such large earthquakes, offsite damage could make prior offsite emergency plans marginally useful at best. In addition, the probability of the proximate occurrence of an earthquake of substantial magnitude and a radiological release from the plant for reasons unrelated to the earthquake itself is even lower. Therefore, there does not appear to exist a set of circumstances at all likely where the consideration of earthquake impacts would significantly improve the state of emergency planning at a nuclear power reactor.

The ability to take protective actions throughout the plume exposure pathway (EPZ) could be hampered during the life of the plant by temporary adverse conditions resulting from natural phenomena such as rain, snow, flooding or by activities in the vicinity of the plant such as a major road repair. Existing NRC regulations require that emergency plans be comprehensive and flexible enough to assure the capability to take appropriate protective action to mitigate the effects of a nuclear emergency under such conditions. Similar types of adverse conditions could result from earthquakes below the Safe Shutdown Earthquake (SSE), which occur proximate in time with an unrelated accidental release of nuclear material from the facility. The concern is with seismic events in the region of the power plant which could impair offsite emergency response. However, emergency plans which meet the standards in 10 CFR 50.47 and Appendix E provide reasonable assurance that appropriate protective measures can and will be taken under such circumstances.

The magnitude of the SSE and the adequacy of a plant's design to meet the SSE are reviewed by NRC and may be controverted in adjudicatory proceedings, but, once settled, should not be reconsidered in reviewing or adjudicating emergency planning issues. If a larger earthquake were considered feasible, then a larger SSE would have been established. If an earthquake smaller than an SSE were considered to be capable of damaging a plant's safety systems, then the plant's design would have been corrected. Thus, emergency plans need not take take into account earthquakes larger or smaller than an SSE. Nevertheless, the basis for emergency planning is not constrained by the design basis for a plant, and emergency planning efforts recognize the possibility that events considered beyond the design basis can occur. A spectrum of potential consequences independent of the particular causes are analyzed in reaching decisions on emergency planning provisions, and the planning basis does not depend upon the particular scenario which may lead to significant offsite releases of radioactivity. To explicitly consider earthquakes as causes for radioactive releases is inconsistent with the emergency planning basis used by NRC in adopting its regulations.

The Commission intends to consider this issue carefully in this rulemaking and to weigh all arguments before reaching a final decision. In the meantime, this rulemaking should not be construed to affect the continuing validity of the Commission's ruling in *San Onofre* and *Diablo Canyon*.

Technical Information

When considering the possibilities of plant damage from seismic events, it is important to understand the severity of seismic events, their range of probabilities, and the potential for reactor accidents caused by seismic events. Three classes of seismic events are considered in this discussion. The first class includes earthquakes of relatively low ground motion, up to the Operating Basis Earthquake (OBE). The OBE ground motion depends on plant location. These accelerations vary in the range of about .05 g to 0.33 g. During an OBE, all safety related plant systems would be expected to remain operating.

The second class of events includes earthquakes with ground motion higher than the OBE but equal to or less than the Safe Shutdown Earthquakes (SSE); the ground motion of the SSE is typically about twice that of the OBE. Because probabilities of occurrence have large uncertainties for the SSE, typical estimates are in the order of one in a thousand to one in ten thousand per year. NRC regulations require that plants be designed to achieve a safe shutdown after an SSE. Given an SSE, all seismically qualified equipment would be expected to function to bring the plant to safe shutdown. An earthquake up to and including an SSE would be cause for an alert emergency action level classification, but would not cause failures that would result in a significant accidental release from the plant. Thus, although such an event would initiate certain emergency plan actions, no offsite response would be required. Only in the event of an accident attributable to multiple unrelated failures of safety related systems due to some undiscovered common cause failure mechanism (such as a major design error), coincident with an earthquake such as an SSE, would there be a situation which would require offsite emergency response when there was extensive offsite damage. The Commission believes that, because of the intensive, continuing review of nuclear safety conducted by NRC, there is an extremely low probability that any such failure mechanisms have been

[1] Copies of these documents are available at the Commission's Public Document Room, 1717 H Street NW., Washington, DC 20555. Copies of these documents may be purchased from the Government Printing Office. Information on current prices may be obtained by writing the U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Publications Sales Manager.

overlooked.

The final class of events includes all earthquakes with ground motion levels above the SSE. Fragility analysis has been used to estimate the probability of failure as a function of ground motion associated with these earthquakes. The Zion, Indian Point, and Limerick Probabilistic Risk Assessments estimated that ground motion on the order of 0.5 g to 0.75 g acceleration would be required to damage these nuclear power plants to the extent that significant release of radioactivity could occur. Some plants, in certain regions, are designed to withstand earthquakes with such ground motion. These plants are able to resist damage to still higher levels of ground motion because of the design margin. It is apparent that the probability estimates for ground accelerations which would be required to damage these nuclear power plants to the extent that significant release of radioactivity would occur are less than the probability estimates for the SSE for these plants.

Based upon the probabilistic risk assessment results for these three plants, the NRC staff considers that for most earthquakes (including some earthquakes more severe than the SSE) the power plant would generally not be expected to pose an offsite radiological hazard. For earthquakes which would cause plant damage leading to immediate offsite radiological hazards but for which there would be relatively minor offsite damage, emergency response capabilities around nuclear power plants would not be seriously affected. For those earthquakes which cause very severe damage to both the plant and the offsite area, emergency response would have marginal benefit because of its impairment by offsite damage. However, the expenditures of additional resources to cope with seismically cause offsite damage may be "of doubtful value considering the modest benefit in overall risk reduction which could be obtained." CLI–84–12, (Slip Opinion at 5).

Proposed Rule

In the *Diablo Canyon* decision the Commission stated that it would initiate rulemaking "to address whether the potential for seismic impacts on emergency planning is a significant enough concern for large portions of the nation to warrant the amendment of the regulations to specifically consider those impacts. The chief focus of the rulemaking will be to obtain additional information to determine whether, in spite of current indications to the contrary, cost-effective reductions in overall risk may be obtained by the explicit consideration of severe earthquakes in emergency response planning." CLI–84–12 (Slip Operation at 9).

The amendments to 10 CFR 50.47 and 10 CFR Part 50 Appendix E which the Commission is proposing would explicitly incorporate in them the interpretations in the Commissions *San Onofre* and *Diablo Canyon* rulings. A new paragraph (e) would be added to 10 CFR 50.47 and a paragraph would be added to the "Introduction" section of Appendix E. The Commission wants to assure that it has the benefits of comments of all interested persons on the subject. The Commission therefore invites comment not only on the text of the proposed rule, but also on the fundamental question of the relationship between earthquakes and emergency planning at nuclear power facilities. Commenters should, at a minimum, address the merits of three possible alternatives:

1. Adoption of the proposed rule explicitly incorporating the Commission's interpretation in *San Onofre* and *Diablo Canyon;*
2. Leaving the issue open for adjudication on a case-by-case basis; or
3. Requiring by rule that emergency plans specifically address the impact of earthquakes.

The Commission would be most assisted by comments which offer specific policy and technical reasons for preferring one alternative over the others.

The Commission is also considering whether to include in this rulemaking tornadoes and other low-frequency natural events. In that possible case, offsite, emergency response plans submitted to satisfy the applicable standards of 10 CFR 50.47 and Appendix E would not need to specifically consider the impact on emergency response capability of earthquakes, tornadoes or any similar low-probability naturally occurring phenomena which are presumed to occur proximate in time with an accidental release of radioactive material from a licensed facility. Comments on this possible alternative are requested.

Separate Views of Commissioner Asselstine

It should be obvious that emergency planning is a site-specific exercise which is not amenable to a generic rulemaking such as that proposed by the Commission. In carrying out their emergency planning responsibilities, both the NRC staff and FEMA have recognized this. When they consider whether the emergency plan for a particular site is flexible enough to envelop all eventualities, they consider the effects of whatever natural phenomena are most likely to disrupt emergency planning at that site. Thus, they have considered snow in New England, hurricanes in Florida, tornados in the Midwest, and earthquakes in California.

The Commission now tells us, however, that the experts were wrong and that earthquakes are somehow so different from other natural phenomena that they need not be considered at all, even in areas of high seismic risk. I examined the basis for the Commission's conclusion in my separate views on CLI–84–12, the *Diablo Canyon* order, so I will not repeat here my reasons for disagreeing with the Commission's conclusion. Suffice it to say that I do not believe that there is any reasonable basis for a rule which would treat earthquakes differently from other natural phenomena for purposes of emergency planning.

In an attempt to counter my criticism of their course of action in the *Diablo Canyon* case, the Commission has just recently decided to request comment on a possible alternative rule which would also exclude from emergency planning "tornadoes and other low-frequency natural events." I do not believe that such a rule would be in the public interest. While hurricanes, tornadoes, and earthquakes may occur relatively infrequently, should they cause or occur coincident with an accident or an emergency at a nuclear plant they could significantly disrupt emergency response capabilities. The staff's solution to this problem has been to require licensees to consider what kinds of effects these natural phenomena cause and to determine whether their emergency plans are flexible enough to deal with these effects. This has hardly been an onerous burden. Thus, with a minimal expenditure of resources, the licensees can prepare for what could be a serious emergency planning problem.

When I agreed to the publication of a rule, I did so with the hope that the Commission intended to carefully and objectively examine the issue of whether and to what extent the complicating effects of earthquakes ought to be considered in emergency planning. I also hoped that the information gathered in the rulemaking would convince the Commission that a rule excluding altogether the considerations of earthquakes was not a wise thing to do. I find, however, that that was a forlorn hope. The Commission is instead intent merely on codifying its *Diablo Canyon* decision, and is going through with rulemaking procedures only so that it can say that it is allowing comment on the issue, no matter how meaningless that opportunity for comment turns out to be. I will not, therefore, agree to the publication of a rule with which I disagree when the rulemaking procedures are not being used as they were intended, to meaningfully gather information to be factored into the rulemaking decision, but instead are

being used solely to circumvent the hearing process in a particular licensing proceeding.

Chairman Palladino's Additional Views

In its bare essentials, the disagreement between the Commission majority and Commissioner Asselstine seems to be that the majority currently believes earthquakes need not be considered in emergency planning whereas Commissioner Asselstine believes that they should. I have difficulty understanding why the opportunity to comment on the majority's proposal should be viewed as "meaningless," or "solely to circumvent the hearing process," but an opportunity to comment on some other proposal, such as a proposal to consider earthquakes, should not. I would hope that the Commission's proposal will stimulate public comments, both pro and con, and I believe that the Commission has plainly indicated its desire to obtain and consider all pertinent comments and facts.

Proposed Finding of No Significant Environmental Impact

The Commission proposes to determine under the National Enviromental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this proposed rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment and therefore an environmental impact statement is not required. See 10 CFR 51.20(a)(1). This determination has been made because the Commission cannot identify any impact on the human environment associated with not requiring consideration of earthquakes in emergency planning and because it is an interpretation of existing regulation.

Regulatory Analysis

The Commission has prepared a regulatory analysis of this proposed regulation. The analysis examines the costs and benefits of the rule as considered by the Commission. A copy of the draft regulatory analysis is available for inspection and copying, for a fee, at the NRC Public Document Room, 1717 H Street, NW, Washington, DC. Single copies of the analysis may be obtained from Michael Jamgochian, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone (301) 433–7615.

Paperwork Reduction Act Statement

This proposed rule contains no information collection requirements and therefore is not subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this proposed rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. The proposed rule clarifies requirements for the issuance of an operating license for a nuclear power plant, licensed pursuant to Section 103 and 104b of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2133, 2134b. The electric utility companies which own and operate nuclear power plants are dominant in their service areas and do not fall within the definition of a small business found in Section 3 of the Small Business Act, 15 U.S.C. 632, or within the Small Business Size Standards set forth in 13 CFR Part 121. Accordingly, there is no significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act of 1980.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and Section 553 of title 5 of the United States Code, notice is hereby given that adoption of the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50 is contemplated.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 continues to read as follows:

Authority: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, 202, 206, 88 Stat. 1242, 1244, 1246, as amended (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Sec. 50.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Sections 50.57(d), 50.58, 50.91, and 50.92 also issued under Pub. L. 97–415, 96 Stat. 2071, 2073 (42 U.S.C. 2133, 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80–50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Sections 50.100–50.102 also issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10 (a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10 (b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, 50.73, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. In § 50.47 a new paragraph (e) is added to read as follows:

§ 50.47 Emergency plans.

* * * * *

(e) Emergency response plans submitted to satisfy the standards set forth in this section need not consider the impact on emergency planning of earthquakes which cause, or occur proximate in time with, an accidental release of radioactive material from the facility.

Appendix E—[Amended]

3. A new sentence is added as an additional paragraph at the end of the Introduction section of Appendix E to read as follows:

I. Introduction

* * * * *

Neither emergency repsonse plans nor evacuation time analyses need consider the impact of earthquakes which cause, or occur proximate in time with, an accidental release of radioactive material from the facility.

Dated at Washington, DC, this 18th day of December 1984.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

50 FR 5600
Published 2/11/85
Comment period expires 5/13/85

Decommissioning Criteria for Nuclear Facilities

See Part 30 Proposed Rule Making

≫50 FR 11884
Published 3/26/85
Comment period expires 5/28/85.

Communications Procedures Amendments

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) proposes to amend its regulations that establish the procedures for submitting correspondence, reports, applications, or other written communications pertaining to the domestic licensing of production and utilization facilities. The proposed amendments indicate the correct mailing address for delivery of the communications and specify the number of copies required to facilitate action by the NRC. The proposed amendments, if adopted, are expected to resolve a number of problems that have developed during the past several years regarding the submittal of applications and reports. In addition to clarifying the procedures, these amendments will result in a reduction in reproduction and postage costs for the affected licensees.

DATE: Comment period expires May 28, 1985. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except for those comments received on or before this date.

ADDRESSES: Interested persons are invited to submit written comments and suggestions to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Services Branch.

FOR FURTHER INFORMATION CONTACT: Steve Scott, Document Management Branch, Division of Technical Information and Document Control, Office of Administration, Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492–8585.

SUPPLEMENTARY INFORMATION: Because of recent revisions to the NRC's requirements for the submittal of information by applicants and licensees, NRC is precluded from designing or doing research on complete new designs from the purpose of establishing or developing their commercial potential.

Previous Experience

The Commission has had experience in the regulation of advanced reactors. In the early 1970's NRC reviewed several applications for high-temperature, gas-cooled reactors (HTGRs) and a conceptual design for a gas-cooled breeder reactor, and granted an operating license to Fort St. Vrain, the only operating HTGR. The NRC also expended substantial effort from 1975 to 1979 in reviewing General Atomic's standard high-temperature, gas-cooled nuclear reactor steam supply system (GASSAR). In addition, the NRC has supported a modest program of safety research on gas-cooled reactors every year since the agency's inception.

The NRC and its predecessor, the Atomic Energy Commission (AEC), have also been involved in the review and licensing of liquid metal fast breeder reactors (LMFBRs). The Fermi-1 and SEFOR reactors were reviewed and licensed, DOE's Fast Flux Text Facility (FFTF) was reviewed but not licensed, and a formal licensing proceeding was conducted for the Clinch River Breeder Reactor (CRBR). The CRBR was subject to the same regulatory process as any current commercial nuclear power project. The NRC conducted an extensive safety research program in support of the LMFBR program and the CRBR licensing effort. When the CRBR project was cancelled, NRC's research program was revised to eliminate CRBR-specific work.

Finally, the Commission notes that the precedent for the broad policy approach to advanced reactor regulation, as proposed here, is firmly established in the 1979 Non-proliferation Alternative Systems Assessment Program (NASAP), wherein the NRC considered the safety and licensability of a variety of advanced reactor concepts within the context of non-proliferation objectives. The concepts considered and reported on by the NRC in the 1979 study ranged from preliminary conceptual designs to variations of existing (LWR) power plant designs.

Current Commission Policy

The Commission's policy with respect to regulating nuclear power reactors is to assure adequate protection of the public health and safety and the environment, consistent with its legislative requirements.

As discussed in the 1985 Policy and Planning Guidance, while the NRC itself does not develop new designs, the Commission will maintain the capability to respond to innovative and advanced designs that might be presented for Commission review. The Commission intends to make known the factors it considers important for advanced reactor concepts in order to minimize complexity and uncertainty in the regulatory process.

On standardization of the current generation of nuclear power reactors, the Commission's 1985 Policy and Planning Guidance states:

> The NRC recognizes that there are advantages to the development and use of standardized nuclear power plant and balance of plant designs. Such designs can benefit public health and safety by concentrating the resources of designers, engineers and vendors on particular approaches, by stimulating standardized programs of construction practice and quality assurance, by improving the training of personnel and by fostering more effective maintenance and improved operation. The use of such designs can also permit more effective and efficient licensing and inspection processes. Therefore, the Commission strongly encourages industry to pursue standardization in future reactor designs.

The Commission is preparing a policy statement on standardization which will be applicable to future reactors.

Proposed Policy

The Commission's proposed policy is to encourage the earliest possible interaction of applicants, vendors, other government agencies and the NRC to provide the most effective regulation for advanced reactors, and to provide all interested parties, including the public, with a timely, independent assessment of the safety characteristics of advanced reactor designs. The NRC would undertake, within its statutory responsibilities, to minimize complexity and add stability and predictability in the licensing and regulation of advanced reactors.

The Commission believes that reactor designs with some or all of the following general characteristics would be desirable. Combinations of some or all of them may help obtain early licensing or standarized design approval with minimum regulatory burden and should be more readily understood by the NRC, the utilities and the general public.

1. Designs that require few supplemental safety features to ensure safety, and/or designs that provide

[1] The general principle defining the scope of NRC's research can be described as avoiding a conflict of interest—"[NRC] should never be placed in position to generate, and then have to defend, basic design data of its own" as expressed in the Conference Report to the Energy Reorganization Act of 1974.

longer time constants to allow for more diagnosis and management prior to reaching safety systems challenge.

2. Simplified safety systems which require the fewest operator actions, the least equipment (especially equipment subjected to severe environmental conditions), and the minimum number of components needed for maintaining safe shutdown conditions, thereby facilitating operator comprehension and reliable system function. Such simplification can also reduce the uncertainties associated with deterministic engineering judgment and probabilistic risk analyses.

3. Designs that (a) minimize the potential for severe accidents and their consequences by providing sufficient inherent safety, reliability, redundancy, diversity and independence in safety systems; (b) provide reliable equipment in the rest of the plant, thereby reducing the number of challenges to the safety systems; (c) provide easily maintainable equipment and components; and (d) reduce potential radiation exposures to plant personnel.

4. Increased standardization and ship fabrication to minimize the potential for field construction errors without creating new difficulties in factory-to-field transport, installation and maintenance.

5. Design features that can be proven by citation of existing technology or which can be satisfactorily established by commitment to a suitable technology development program.

If specific advanced reactor designs with characteristics such as the foregoing were brought to the NRC for comment and/or evaluation, the Commission could develop preliminary general design and licensing criteria for their safety-related aspects. However, until such time as detailed conceptual designs are submitted, the Commission believes that regulatory guidance must be sufficiently general to avoid placing unnecessary constraints on the development of new design concepts. The number and nature of regulatory requirements will be based on the extent to which an individual advanced reactor design incorporates the general characteristics above.

During the evolutionary phase of advanced reactor development, the Commission particularly encourages design innovations which increase safety and reliability (such as those described above) and which generally depend on technology which is either proven or can be demonstrated by a satisfactory technology development program.

confusion has arisen with regard to copy requirements and proper submittal procedures. In an effort to clarify these matters, the NRC issued Regulatory Guide 10.1 (Revision 4) "Compilation of Reporting Requirements for Persons Subject to NRC Regulations," and on August 8, 1982 the Director, Division of Licensing, Office of Nuclear Reactor Regulation, issued Generic Letter 82-14 "Submittal of Documents to the Nuclear Regulatory Commission." While these efforts at clarification resolved much of the confusion, applicants and licensees continue to demonstrate concern and confusion as to specific requirements. Therefore, the NRC is issuing this rule to specify copy requirements and provide mailing instructions. The rule also clarifies the current requirement in § 50.30 for making an updated copy of the application available at an appropriate office near the site for inspection by the public.

This rule supersedes all existing requirements and guidance with respect to the number of copies and mailing procedures. This rule codifies NRC actions to reduce copy requirements. For example § 50.30 would be amended to reduce copy requirements for amendment applications from 60 to 40; copy requirements for licensee reports would be reduced to three. The proposed rule would reduce overall the number of copies transmitted to the Commission. These changes would result in reduced reproduction and postage costs for licensees.

The proposed rule would also remove from § 50.4, special submittal requirements for the Fort St. Vrain Nuclear Generating Station. The rule would not affect the authority and responsibility delegated to the Regional Administrator of Region IV for implementing selected parts of the nuclear reactor licensing program for the Fort St. Vrain Generating Station.

Undesignated paragraphs in the amended text have been designated and obsolete titles of NRC personnel have been updated to reflect current NRC titles.

Environmental Impact: Categorical Exclusion

The NRC has determined that this proposed rule is the type of action described in categorical exclusion 10 CFR 51.22(c)(3). Therefore, neither an environmental impact statement nor an environmental assessment has been prepared for this proposed rule.

Paperwork Reduction Act Statement

This proposed rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget approval number 3150-0011.

Regulatory Analysis

The Commission has prepared a draft regulatory analysis on this proposed regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The draft analysis is available for inspection in the NRC Public Document Room, 1717 H Street NW, Washington, DC 20555. Single copies of the analysis may be obtained from Steve Scott, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555; telephone 301-492-28585.

The Commission requests public comment on the draft regulatory analysis. Comments on the draft analysis may be submitted to the NRC as indicated under the **ADDRESSES** heading.

Regulatory Flexibility Certification Statement

Based upon the information available at this stage of the rulemaking proceeding and in accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that, if promulgated, this rule will not have a significant economic impact upon a substantial number of small entities. The proposed rule would amend 10 CFR 50 by specifying submittal procedures which facilitate NRC processing. The rule is expected to affect nuclear generating facilities by reducing the overall regulatory burden of reproducing and transmitting submittals to the Commission. Therefore, it is not expected to have a significant economic impact on any licensee. However, comments on the expected economic impact of this proposed rule on any small entity are welcome.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is proposing to adopt the following amendments to 10 CFR Part 50.

PART 50—[AMENDED]

The authority citation for this document is:

(Sec. 161, Pub. L. 83-703, 68 Stat. 948, as amended (42 U.S.C. 2201), and Sec. 201, Pub. L. 93-438, 88 Stat. 1242 (42 U.S.C. 5841))

1. Section 50.4 is revised to read as follows:

§ 50.4 Written communications.

(a) *Address requirements.* The signed original of all correspondence, reports, applications, and other written communications from the applicant or licensee to the Nuclear Regulatory Commission concerning the regulations in this part or individual license conditions must be addressed to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555.

(b) *Distribution requirements.* Copies of all correspondence, reports, and other written communications concerning the regulations in this part or individual license conditions must be submitted to the Nuclear Regulatory Commission at the locations and in the quantities set forth below (addresses for the NRC Regional Offices are listed in Appendix D of Part 20 of this chapter).

(1) *Permits, licenses, and amendments.* Each licensee or applicant shall submit any written communications, as defined in paragraphs (b)(1) (i) through (xxi) of this section, which are required for an application for a construction permit, operating license, or amendment of these, as follows, except as otherwise specified in this section: the signed original and 37 copies to the Nuclear Regulatory Commission, Document Control Desk, Washington, DC 20555, one copy to the appropriate Regional Office and one copy to the appropriate NRC Resident Inspector, if applicable;

(i) Application for exemption pursuant to § 50.12;

(ii) Application (including any applicable drawings, maps, photographs, models, or computer printouts) for an operating license, construction permit, or amendment pursuant to §§ 50.30 through 50.49, and any communications from the applicant to the Commission pertaining to an application except as otherwise specified in this section;

(iii) Additional TMI-related requirements pursuant to § 50.34(f);

(iv) Request for approval of design feature or specification pursuant to § 50.35(b);

(v) Analysis of hydrogen control system pursuant to § 50.44(c)(3)(vi)(A);

(vi) Proposed schedule for meeting the requirements for a hydrogen control system pursuant to § 50.44(c)(3)(vii)(A);

(vii) Analysis to ensure safe plant operation pending completion of equipment qualification pursuant to § 50.49(i);

(viii) Application for amendment of technical specifications pursuant to § 50.55a(g)(5)(ii);

(ix) Information demonstrating compliance with requirements for reduction of risk from anticipated transients without scram (ATWS) events pursuant to § 50.62 (c)(6) and (d);

(x) Application for exemption pursuant to § 50.73(f);

(xi) Application for transfer of license pursuant to § 50.80(b);

(xii) Application for termination of license pursuant to § 50.82(a);

(xiii) Application for amendment of license or construction permit pursuant to § 50.90, except as provided in paragraph (b)(4) of this section relating to safeguards information;

(xiv) Analysis of no significant hazards consideration pursuant to § 50.91;

(xv) Information concerning the modification of structures, systems or components of a facility pursuant to § 50.109;

(xvi) Evaluation of the potential for effects from long-term buildup of radioactive material in the environment pursuant to Appendix I "Concluding Statement of Position of the Regulatory Staff," A.3.a of this part;

(xvii) Complete listing of each computer program used in emergency core cooling system (ECCS) evaluation model pursuant to Appendix K.II.1.c of this part;

(xviii) Application for a manufacturing license pursuant to Appendix M of this part;

(xix) Application for license to construct and operate nuclear power reactors of the same design pursuant to Appendix N of this part;

(xx) Preliminary or final standard design for a nuclear power reactor pursuant to Appendix O of this part; and

(xxi) Application for early site suitability review pursuant to Appendix Q of this part.

(2) *Reports and other communications.* Written communications, as defined in paragraphs (b)(2) (i) through (xxvi) of this section, that are required of holders of operating license or construction permits, must be submitted as follows: the signed original to the Nuclear Regulatory Commission, Document Control Desk, Washington, DC 20555, one copy to the appropriate Regional Office, and one copy to the appripriate NRC Resident Inspector, if applicable;

(i) Periodic report of the progress and results of research and development programs pursuant to § 50.35(b);

(ii) Notification of exceeding any safety limit for nuclear reactors pursuant to § 50.36(c)(1)(i)(A);

(iii) Notification of exceeding any safety limit for a fuel reprocessing plant pursuant to § 50.36(c)(1)(i)(B);

(iv) Notification of failure of an automatic safety system to function as required for nuclear reactors pursuant to § 50.36(c)(1)(ii)(A);

(v) Notification of failure of an automatic alarm or protective device to function as required for a fuel reprocessing plant pursuant to § 50.36(c)(1)(ii)(B);

(vi) Notification of failure to meet limiting conditions for operating (Licensee Event Report) pursuant to § 50.36(c)(2);

(vii) Reports required by approved technical specifications pursuant to § 50.36(c)(5). These reports include but are not limited to the following: startup reports, periodic operating reports, source leakage reports, annual environmental reports (Parts A and B), and nonroutine environmental operating reports;

(viii) Semiannual effluent release report pursuant to § 50.36a(a)(2);

(ix) Schedule for qualification of electrical equipment important to safety pursuant to § 50.49(g);

(x) Reguest for extension of submittal deadline pursuant to § 50.49(g);

(xi) Notification of a significant problem requiring extension of completion date pursuant to § 50.49(h);

(xii) Change to the Safety Analysis Report quality assurance program description pursuant to § 50.54(a)(3) or § 50.55(f)(3);

(xiii) Statement to enable the Commission to determine whether a license should be modified, suspended, or revoked pursuant to § 50.54(f);

(xiv) Report of levels of insurance or financial protection pursuant to § 50.54(w)(4);

(xv) Construction deficiency report and interim deficiency report pursuant to § 50.55(e)(3);

(xvi) Notification of impracticality of conforming with code requirements pursuant to § 50.55a(g)(5)(iii);

(xvii) Annual report of changes, tests and experiments pursuant to § 50.59(b);

(xviii) Reports required by the Nuclear Regulatory Commission pursuant to § 50.71(a), e.g., responses to Bulletins issued by the Nuclear Regulatory Commission;

(xix) Annual financial report pursuant to § 50.71(b);

(xx) Licensee Event Report (LER) and supplemental information pursuant to § 50.73 (c) and (d);

(xxi) Information regarding modification of structures, systems, or components of a facility pursuant to § 50.109(c);

(xxii) Information regarding reactor vessel beltline material inservice program pursuant to Appendix G.V.E. of this part;

(xxiii) Proposed withdrawal schedule for surveillance capsules pursuant to Appendix H.II.B.3 of this part;

(xxiv) Report of capsule withdrawal and fracture toughness tests pursuant to Appendix H.III.A of this part;

(xxv) Report of release in excess of design objectives pursuant to Appendix I.IV.A.3 of this part;

(xxvi) Reactor containment building integrated leak rate test pursuant to Appendix J.V.B of this part.

(3) *Acceptance review application.* Written communications required for an application for determination of suitability for docketing pursuant to § 50.30(a)(6) must be submitted as follows: the signed original and 13 copies to the Nuclear Regulatory Commission, Document Control Desk, Washington, DC 20555 and one copy to the appropriate Regional Office.

(4) *Security plan and related submittals.* Written communications, as defined in paragraphs (b)(4) (i) through (iv) of this section must be submitted as follows: the signed original and three copies to the Nuclear Regulatory Commission, Document Control Desk, Washington, DC 20555, and two copies to the appropriate Regional Office;

(i) Physical security plan pursuant to § 50.34;

(ii) Safeguards contingency plan pursuant to § 50.34;

(iii) Change to security plan or safeguards contingency plan made without prior Commission approval pursuant to § 50.54(p);

(iv) Safeguards information contained in an application for amendment pursuant to § 50.90.

(5) *Emergency plan and related submittals.* Written communications as defined in paragraphs (b)(5) (i) through (iii) in this section, must be submitted as follows: "the signed original to the Nuclear Regulatory Commission, Document Control Desk, Washington, DC 20555, two copies to the appropriate Regional Office, and one copy to the appropriate NRC Resident Inspector;

(i) Emergency plan pursuant to § 50.34;

(ii) Change to an emergency plan pursuant to § 50.54(q);

(iii) Emergency implementing procedures pursuant to Appendix E.V of this part.

(6) *Updated FSAR.* An updated Final Safety Analysis Report (FSAR) or replacement pages, pursuant to § 50.71(e) must be submitted as follows: the signed original and 10 copies to the Nuclear Regulatory Commission, Document Control Desk, Washington, DC 20555 one copy to the appropriate Regional Office, and one copy to the appropriate NRC Regident Inspector.

(7) *Quality assurance topical report changes.* A change to an NRC-accepted quality assurance topical report description pursuant to § 50.54(a)(3) or § 50.55(f)(3) must be submitted as follows: one signed original to the Nuclear Regulatory Commission, Document Control Desk, Washington, DC 20555.

(c) *Form of communications.* All copies submitted to meet the requirements set forth in paragraph (b) of this section must be typewritten, printed or otherwise reproduced in permanent form on unglazed paper. Exceptions to these requirements may be granted for the submittal of micrographic, photographic, or electronic forms. Prior to making any submittal in other than paper form, the applicant or licensee must contact the Division of Technical Information and Document Control, Nuclear Regulatory Commission, Washington, DC 20555, Telephone (301) 492–8585, to obtain specifications, copy requirements, and prior epproval.

(d) *Delivery of communications.* Written communications may be delivered to the Document Control Desk at 7920 Norfolk Avenue, Bethesda, MD, between the hours of 8:15 a.m. and 4:00 p.m. Eastern Time.

(e) *Citation of regulatory requirement.* All correspondence, reports, and other written communications submitted to the Nuclear Regulatory Commission pursuant to the regulations of this part must cite in the upper right corner of the first page of the submittal the specific regulaton requiring submission.

(f) *Conflicting requirements.* If there is a conflict between the Commission's regulations in this part, a license condition or technical specification, or other written Commission approval or authorization pertaining to the submittal requirements for the same type of application or report, the submittal requirements specified in the regulations in this part for the applications and reports apply unless the Commission, pursuant to § 50.12 grants a specific exemption from the submittal requirements specified in the regulations in this part.

2. In § 50.12, the introductory language of paragraph (b) is revised to read as follows:

§ 50.12 Specific exemptions.

* * * * *

(b) Any person may request an exemption permitting the conduct of activities prior to the issuance of a construction permit prohibited by § 50.10. The request must be submitted as specified in § 50.4. The Commission may grant such an exemption upon considering and balancing the following factors:

* * * * *

3. In § 50.30, paragraphs (a) and (b) are revised to read as follows and pragraph (c) is removed.

§ 50.30 Filing of application for licenses; oath or affirmation.

(a) *Serving of applications.* (1) Each filing of an application for a license to construct and/or operate a production or utilization facility (including amendments to the applications) must be submitted to the U.S. Nuclear Regulatory Commission in accordance with § 50.4.

(2) An additional 10 copies of the general information and 30 copies of the safety analysis report, or part thereof or amendment thereto, must be retained by the applicant for distribution in accordance with the written instructions of the Director, Office of Nuclear Reactor Regulation, or the Director, Office of Nuclear Material Safety and Safeguards, as appropriate.

(3) Each applicant shall, upon notification by the Atomic safety and Licensing Board appointed to conduct the public hearing required by the Atomic Energy Act for the issuance of a construction permit, update the application and serve the updated copies of the application or parts of it, eliminating all superseded information, together with an index of the updated application, as directed by the Atomic Safety and Licensing Board. In addition, at that time the applicant shall serve a copy of the updated application on the Atomic Safety and Licensing Appeal Panel. Any subsequent amendment to the application must be served on those served copies of the application and must be submitted to the U.S. Nuclear Regulatory Commission as specified in § 50.4.

(4) The applicant must make a copy of the updated application available at the public hearing for the use of any other parties to the proceeding, and shall certify that the updated copies of the application contain the current contents of the application submitted in

accordance with the requirements of this part.

(5) At the time of filing an application, the Commission will establish a Local Public Document Room near the site of the proposed facility, for the use of the public, where a copy of the application, subsequent amendments, and other records pertinent to the facility will be available for public inspection and copying.

(6) The serving of copies required by this section must not occur until the application has been docketed pursuant to § 2.101(a) of this chapter. Copies must be submitted to the Commission, as specified in § 50.4, to enable the Director, Office of Nuclear Reactor Regulation, or Director, Office of Nuclear Material Safety and Safeguards, as appropriate, to determine whether the application is sufficiently complete to permit docketing.

(b) *Oath or affirmation.* Each application for a license, including whenever appropriate a construction permit, or amendment of it, and each amendment of each application must be executed in a signed original by the applicant or duly authorized officer thereof under oath or affirmation.

* * * * *

4. In § 50.36 paragraph (c)(5) is revised to read as follows:

§ 50.36 Technical specifications.

* * * * *

(c) * * *

(5) *Administrative controls.* Administrative controls are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner. Each licensee shall submit any reports to the Commission pursuant to approved technical specifications as specified in § 50.4.

* * * * *

5. In 50.36a, paragraph (a)(2) is revised to read as follows:

§ 50.36a Technical specifications on effluents from nuclear power reactors.

(a) * * *

(2) Each licensee shall submit a report to the Commission within 60 days after January 1 and July 1 of each year, that specifies the quantity of each of the principal radionuclides released to unrestricted areas in liquid and in gaseous effluents during the previous six months of operation, including any other information as may be required by the Commission to estimate maximum potential annual radiation doses to the public resulting from effluent releases. The report must be submitted as specified in § 50.4. If quantities of radioactive materials released during the reporting period are significantly above design objectives, the report must cover this specifically. On the basis of these reports and any additional information the Commission may obtain from the licensee or others, the Commission may require the licensee to take action as the Commission deems appropriate.

* * * * *

6. In § 50.44, paragraphs (c)(3)(vi)(A) and (c)(3)(vii)(A) are revised to read as follows:

§ 50.44 Standards for combustible gas control system in light water cooled power reactors.

* * * * *

(c) * * *

(3) * * *

(vi)(A) Each applicant for or holder of an operating license for a boiling light-water nuclear power reactor with a Mark III type of containment or for a pressurized light-water nuclear power reactor with an ice condenser type of containment issued a construction permit before March 28, 1979, shall submit an analysis to the Commission as specified in § 50.4.

* * * * *

(vii)(A) By June 25, 1985, each applicant for or holder of an operating license subject to the requirements of paragraphs (c)(3) (iv), (v) and (vi) of this section shall develop and submit to the Commission, as specified in § 50.4, a proposed schedule for meeting these requirements. The schedule may be developed using integrated scheduling systems previously approved for the facility by the NRC.

* * * * *

7. In § 50.49, paragraph (h) and the introductory language of paragraph (i) are revised to read as follows:

§ 50.49 Environmental qualification of electric equipment important to safety for nuclear power plants.

* * * * *

(h) Each licensee shall notify the Commission as specified in § 50.4 of any significant equipment qualification problem that may require extension of the completion date provided in accordance with paragraph (g) of this section within 60 days of its discovery.

(i) Applicants for operating licenses granted after February 22, 1983, but prior to November 30, 1985, shall perform an analysis to ensure that the plant can be safely operated pending completion of equipment qualification required by this section. This analysis must be submitted, as specified in § 50.4, for consideration prior to the granting of an operating license and must include, where appropriate, consideration of:

* * * * *

8. In 50.54, the introductory language of paragraph (a)(3), (a)(3)(i), (f), the introductory language of (p), (q), and (w)(4) are revised to read as follows:

§ 50.54 Conditions of licenses.

* * * * *

(a) * * *

(3) After March 11, 1983, each licensee described in paragraph (a)(1) of this section may make a change to a previously accepted quality assurance program description included or referenced in the Safety Analysis Report, provided the change does not reduce the commitments in the program description previously accepted by the NRC. Changes to the quality assurance program description that do not reduce the commitments must be submitted to the NRC at least annually in accordance with the requirements of § 50.71. Changes to the quality assurance program description that do reduce the commitments must be submitted to NRC and receive NRC approval prior to implementation, as follows:

(i) Changes made to the Safety Analysis Report must be submitted, as specified in § 50.4. Changes made to NRC-accepted quality assurance topical report descriptions must be submitted, as specified in § 50.4.

* * * * *

(f) The licensee shall at any time before expiration of the license, upon request of the Commission, submit, as specified in § 50.4, written statements, signed under oath or affirmation, to enable the Commission to determine whether or not the license should be modified, suspended, or revoked.

* * * * *

(p) The licensee shall prepare and maintain safeguards contingency plan procedures in accordance with Appendix C of Part 73 of this chapter for making decisions and the actions contained in the Responsibility Matrix of the safeguards contingency plan. The licensee may make no change which would decrease the effectiveness of a security plan prepared pursuant to § 50.34(c) or Part 73 of this chapter, or of the first four categories of information (Background, Generic Planning Base, Licensee Planning Base, Responsibility Matrix) contained in a licensee safeguards contingency plan prepared pursuant to § 50.34(d) or Part 73 of this chapter without prior approval of the Commission. A licensee desiring to make such a change shall submit an application for an amendment to a

license pursuant to § 50.80. The licensee may make changes to the security plan or to the safeguards contingency plan without prior Commission approval if the changes do not decrease the safeguards effectiveness of the plan. The licensee shall maintain records of changes to the plans made without prior Commission approval for a period of two years from the date of the change, and shall submit, as specified in § 50.4, a report containing a description of each change within two months after the change is made. Prior to the safeguards contingency plan being put into effect, the licensee shall have:

* * * * *

(q) A licensee authorized to possess and/or operate a nuclear power reactor shall follow and maintain in effect emergency plans which meet the standards in § 50.47(b) and the requirements in Appendix E to this part. A licensee authorized to possess and/or operate a research reactor or a fuel facility shall follow and maintain in effect emergency plans which meet the requirements in Appendix E of this part. The nuclear power reactor licensee may make changes to these plans without Commission approval only if the changes do not decrease the effectiveness of the plans and the plans, as changed, continue to meet the standard of § 50.47(b) and the requirements of Appendix E of this part. The research reactor licensee and/or the fuel facility licensee may make changes to these plans without Commission approval, only if these changes do not decrease the effectiveness of the plans and the plans, as changed, continue to meet the requirements of Appendix E of this part. Proposed changes that decrease the effectiveness of the approved emergency plans shall not be implemented without application to and approval by the Commission. The licensee shall submit, as specified in § 50.4, a report of each proposed change for approval. If a change is made without approval, the licensee shall submit, as specified in § 50.4, a report of each change within 30 days after the change is made.

* * * * *

(w) * * *

(4) The licensee shall report, as specified in § 50.4, on April 1 of each year, the present levels of insurance or financial protection it maintains and the sources of the insurance or protection.

* * * * *

9. In § 50.55, paragraphs (e)(3), (f)(3), and (f)(3)(i) are revised to read as follows:

§ 50.55 Conditions of construction permits.

* * * * *

(e) * * *

(3)(i) The holder of a construction permit shall also submit, as specified in § 50.4, a written report on a reportable deficiency within 30 days.

(ii) The report must include a description of the deficiency, an analysis of the safety implications and the corrective action taken, and sufficient information to permit analysis and evaluation of the deficiency and of the corrective action. If sufficient information is not available for a definitive report to be submitted within 30 days, an interim report containing all available information shall be filed, as specified in § 50.4, together with a statement that indicates when a complete report will be filed.

* * * * *

(f) * * *

(3) After March 11, 1983, each construction permit holder described in paragraph (f)(1) of this section may make a change to a previously accepted quality assurance program description included or referenced in the Safety Analysis Report, provided the change does not reduce the commitments in the program description previously accepted by the NRC. Changes to the quality assurance program description that do not reduce the commitments must be submitted to NRC within 90 days. Changes to the quality assurance program description that do reduce the commitments must be submitted to NRC and receive NRC approval before implementation, as follows:

(i) Changes to the Safety Analysis Report must be submitted for review as specified in § 50.4. Changes made to NRC-accepted quality assurance topical report descriptions must be submitted as specified in § 50.4

* * * * *

10. In § 50.55a, paragraphs (g)(5)(ii) and (g)(5)(iii) are revised to read as follows:

§ 50.55a Codes and standards.

* * * * *

(g) *Inservice inspection requirements.*

* * * * *

(5) * * *

(ii) If a revised inservice inspection program for a facility conflicts with the technical specification for the facility, the licensee shall apply to the Commission for amendment of the technical specifications to conform the technical specification to the revised program. The licensee shall submit this application, as specified in § 50.4, at least six months before the start of the period during which the provisions become applicable, as determined by paragraph (g)(4) of this section.

(iii) If the licensee has determined that conformance with certain code requirements is impractical for its facility, the licensee shall notify the Commission and submit, as specified in § 50.4, information to support the determinations.

* * * * *

11. In § 50.59, paragraph (b) is revised to read as follows:

§ 50.59 Changes, tests, and experiments.

* * * * *

(b)(1) The licensee shall maintain records of changes in the facility and of changes in procedures made pursuant to this section, to the extent that these changes constitute changes in the facility as described in the safety analysis report or to the extent that they constitute changes in procedures as described in the safety analysis report. The licensee shall also maintain records of tests and experiments carried out pursuant to paragraph (a) of this section. These records must include a written safety evaluation which provides the bases for the determination that the change, test, or experiment does not involve an unreviewed safety question.

(2) The licensee shall submit, as specified in § 50.4, a report containing a brief description of any changes, tests, and experiments, including a summary of the safety evaluation of each. The report must be submitted annually or at such shorter intervals as may be specified in the license.

(3) The records of changes in the facility shall be maintained until the date of termination of the license, and records of changes in procedures and records of tests and experiments shall be maintained for a period of five years.

* * * * *

12. In § 50.62 paragraph (c)(6) and (d) are revised to read as follows:

§ 50.62 Requirements for reduction of risk from anticipated transients without scram (ATWS) events for light-water-cooled nuclear powerplants.

* * * * *

(c) * * *

(6) Information sufficient to demonstrate to the Commission the adequacy of items in paragraphs (c)(1) through (c)(5) of this section shall be submitted to the Commission as specified in § 50.4.

(d) *Implementation.* By 180 days after the issuance of the QA guidance for non-safety related components each licensee shall develop and submit to the Commission, as specified in § 50.4, a proposed schedule for meeting the

requirements of paragraphs (c)(1) through (c)(5) of this section. Each shall include an explanation of the schedule along with a justification if the schedule calls for final implementation later than the second refueling outage after July 26, 1984, or the date of issuance of a license authorizing operation above 5 percent of full power. A final schedule shall then be mutually agreed upon by the Commission and licensee.

13. In § 50.71, paragraphs (a), (b) and (e)(1) are revised to read as follows:

§ 50.71 Maintenance of records, making of reports.

(a) Each licensee and each holder of a construction permit shall maintain all records and make all reports, in connection with the activity, as may be required by the conditions of the license or permit or by the rules, regulations, and orders of the Commission in effectuating the purposes of the Act, including section 105 of the Act. Reports must be submitted in accordance with § 50.4.

(b) With respect to any production or utilization facility of a type described in §§ 50.21(b) or 50.22, or a testing facility, each licensee and each holder of a construction permit shall submit its annual financial report, including the certified financial statements, to the Commission as specified in § 50.4 upon issuance of the report.

• • • • •

(e) • • •

(1) The licensee shall submit revisions containing updated information to the Commission as specified in § 50.4 on a replacement-page basis that is accompanied by a list which identifies the current pages of the FSAR following page replacement.

• • • • •

14. In § 50.73, paragraphs (c), (d), and (f) are revised to read as follows:

§ 50.73 Licensee event report system.

• • • • •

(c) *Supplemental information.* The Commission may require the licensee to submit specific additional information beyond that required by paragraph (b) of this section if the Commission finds that supplemental material is necessary for complete understanding of an unusually complex or significant event. These requests for supplemental information will be made in writing and the licensee shall submit, as specified in § 50.4, the requested information as a supplement to the initial LER.

(d) *Submission of reports.* Licensee Event Reports must be prepared on Form NRC 366 and submitted within 30 days of discovery of a reportable event or situation to the U.S. Nuclear Regulatory Commission, as specified in § 50.4.

• • • • •

(f) *Exemptions.* Requests for exemptions to the reporting requirements under this section must include adequate justification and be submitted as specified in § 50.4. Upon a request or at the initiation of the NRC staff, the NRC Executive Director for Operations may, by a letter to the licensee, grant exemptions to the reporting requirements under this section.

• • • • •

15. In § 50.82, paragraph (a) is revised to read as follows:

§ 50.82 Applications for termination of licenses.

(a) Any licensee may submit an application to the Commission as specified in § 50.4 for authority to surrender a license voluntarily and to dismantle the facility and dispose of its component parts. The Commission may require information, including information as to proposed procedures for the disposal of radioactive material, decontamination of the site, and other procedures, to provide reasonable assurance that the dismantling of the facility and disposal of the component parts will be performed in accordance with the regulations in this chapter and will not be inimical to the common defense and security or to the health and safety of the public.

• • • • •

16. Section 50.90 is revised to read as follows:

§ 50.90 Application for amendment of license or construction permit.

Whenever a holder of a license or construction permit desires to amend the license or permit, application for an amendment must be filed, as specified in § 50.4 with the Commission, fully describing the changes desired, and following as far as applicable the form prescribed for original applications.

17. In § 50.91, paragraph (a)(1) is revised to read as follows:

§ 50.91 Notice for public comment; State consultation.

• • • • •

(a) *Notice for public comment.* (1) At the time a licensee requests an amendment, it must provide, as specified in § 50.4, to the Commission its analysis, using the standards in § 50.92, about the issue of no significant hazards consideration.

• • • • •

18. In § 50.109, paragraph (c) is revised to read as follows:

§ 50.109 Backfitting.

• • • • •

(c) The Commission may at any time require a holder of a construction permit or a license to submit, as specified in § 50.4, any information concerning the addition or proposed addition, the elimination or poposed elimination, or the modification or proposed modification of structures, systems, or components of a facility that it deems appropriate.

19. In Appendix E, section V is revised to read as follows:

Appendix E—Emergency Planning and Preparedness for Production and Utilization Facilities [1]

• • • • •

V. Implementing Procedures

No less than 180 days prior to the scheduled issuance of an operating license for a nuclear power reactor or a license to possess nuclear material the applicant's detailed implementing procedures for its emergency plan shall be submitted to the Commission as specified in § 50.4. Licensees who are authorized to operate a nuclear power facility shall submit any changes to the emergency plan or procedures to the Commission, as specified in § 50.4, within 30 days of such changes.

20. In Appendix G, section V, paragraph E is revised to read as follows:

Appendix G—Fracture Toughness Requirements

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V. Inservice Requirements—Reactor Vessel Beltline Material

• • • • •

E. The proposed programs for satisfying the requirements of sections V.C. and V.D. of this appendix must be submitted as specified in § 50.4, for review and approval on an individual case basis at least three years prior to the date when the predicted fracture toughness levels will no longer satisfy the requirements of section V.B. of this appendix.

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[1] NRC staff has developed two regulatory guides: 2.6 "Emergency Planning for Research Reactors," and 3.42 "Emergency Planning in Fuel Cycle Facilities and Plants Licensed Under 10 CFR Parts 50 and 70," and a joint NRC/FEMA report, NUREG-0654, FEMA-REP-1 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants for Interim Use and Comment," January 1980, to provide guidance in developing plans for coping with emergencies. Copies of these documents are available at the Commission's Public Document Room 1717 H Streets, NW, Washington, DC 20555. Copies of these documents may be purchased from the Government Printing Office. Information on current prices may be obtained by writing the U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Publications Sales Manager.

21. In Appendix H, section II, paragraph B.3 and section III, paragraph A are revised to read as follows:

Appendix H—Reactor Vessel Material Surveillance Program Requirements

• • • • •

II. Surveillance Program Criteria

B. • • •

3. A proposed withdrawal schedule must be submitted with a technical justification as specified in § 50.4. The proposed schedule must be approved prior to implementation.

• • • • •

III. Report of Test Results

A. Each capsule withdrawal and the test results must be the subject of a summary technical report to be submitted as specified in §50.4 within one year after capsule withdrawal unless an extension is granted by the Director, Office of Nuclear Reactor Regulation.

• • • • •

22. In Appendix I, section IV, paragraph A.3. and paragraph A.3.a of the "Concluding Statement on Position of the Regulatory Staff (Docket–RM–50–2)" are revised to read as follows:

Appendix I—Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low As Is Reasonably Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents

• • • • •

Sec. IV. Guides on technical specifications for limiting conditions for operation for light-water-cooled nuclear power reactors licensed under 10 CFR Part 50.

• • • • •

A. • • •

3. Report these actions as specified in § 50.4, within 30 days from the end of the quarter during which the release occurred.

• • • • •

Concluding Statement on Positions of the Regulatory Staff (Docket–RM–50–2).

A. • • •

3. • • •

a. The applicant submits, as specified in § 50.4, an evaluation of the potential for effects from long-term buildup on the environment in the vicinity of the site of radioactive material, with a radioactive half-life greater than one year, to be released; and

• • • • •

23. In Appendix J, section V, paragraph B.1. is revised to read as follows:

Appendix J—Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors

• • • • •

V. Inspection and Reporting of Tests

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B. *Report of test results.* 1. The preoperational and periodic tests must be the subject of a summary technical report submitted to the Commission as specified in § 50.4 approximately three months after the conduct of each test. The report must be titled "Reactor Containment Building Integrated Leak Rate Test."

• • • • •

24. In Appendix K, section II, paragraph 1.c. is revised to read as follows:

Appendix K—ECCS evaluation models

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II. Required Documentation

1. • • •

C. The licensee shall submit to the Commission as specified in § 50.4, a complete listing of each computer program, in the same form as used in the evluation model.

• • • • •

25. In Appendix M, Paragraph 2 is revised to read as follows:

Appendix M—Standardization of Design; Manufacture of Nuclear Power Reactors; Construction and Operation of Nuclear Power Reactors Manufactured Pursuant to Commission License

• • • • •

2. An application for a manufacturing license pursuant to this Appendix M must be submitted as specified in § 50.4 and meet all the requirements of §§ 50.34(a)(1)–(9) and 50.34a (a) and (b), except that the preliminary safety analysis report shall be designated as a "design report" and any required information or analyses relating to site matters shall be predicated on postulated site parameters which must be specified in the application. The application must also include information pertaining to design features of the proposed reactor(s) that affect plans for coping with emergencies in the operation of the reactor(s).

• • • • •

26. In Appendix N, paragraph 2. is revised to read as follows:

Appendix N—Standardization of Nuclear Power Plant Designs: Licenses To Construct and Operate Nuclear Power Reactors of Duplicate Design at Multiple Sites

• • • • •

2. Applications for construction permits submitted pursuant to this Appendix must include the information required by §§ 50.33, 50.33a, 50.34(a) and 50.34a (a) and (b) and be submitted as specified in § 50.4. The applicant shall also submit the information required by § 51.50 of this chapter. • • •

• • • • •

27. In Appendix O, paragraph 2 is revised to read as follows:

Appendix O—Standardization of Design; Staff Review of Standard Designs

• • • • •

2. The submittal for review of the standard design must be made in the same manner and in the same number of copies as provided in §§ 50.4 and 50.30 for license applications.

• • • • •

28. In Appendix Q, paragraph 2 is revised to read as follows:

Appendix Q—Pre-Application Early Review of Site Suitability Issues

• • • • •

2. The submittal for early review of site suitability issue(s) must be made in the same manner and in the same number of copies as provided in §§ 50.4 and 50.30 for license applications. The submittal must include sufficent information concerning a range of postulated facility design and operation parameters to enable the Staff to perform the requested review of site suitability issues. The submittal must contain suggested conclusions on the issues on site suitability submitted for review and must be accompanied by a statement of the bases or the reasons for those conclusions. The submittal must also list, to the extent possible, any long-range objectives for ultimate development of the site, state whether any site selection process was used in preparing the submittal, describe any site selection process used, and explain what consideration, if any, was given to alternative sites.

• • • • •

Dated at Bethesda, Maryland, this 14th day of March 1985.

For the Nuclear Regulatory Commission.

William J. Dircks,

Executive Director for Operations.

≫50 FR 16506
Published 4/26/85
Comment period expires 5/28/85

10 CFR Part 50

Specific Exemptions

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule..

SUMMARY: The Nuclear Regulatory Commission is proposing to amend its regulations to clarify the standards that will be applied when it considers whether to grant exemptions from the regulatory requirements codified in 10 CFR Part 50.

DATE: Comment period expires May 28, 1985. Comments received after that date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before May 28, 1985.

ADDRESSES: Send Comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Attn: Docketing and Service Branch. Hand deliver comments to: Room 1121, 1717 H Street, NW., Washington, D.C. between 8:15 a.m. and 5: p.m.

FOR FURTHER INFORMATION CONTACT:
F. X. Cameron, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: 301–492–8689

SUPPLEMENTARY INFORMATION:

I. Background

Section 50.12 of Chapter 1, Title 10 of the Code of Federal Regulations provides that the Commission may grant exemptions from the regulations in Part 50 that it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest. Traditionally, this authority has been delegated by the Commission to its staff which determines whether exemptions are needed and justified. The Commission believes that it is not possible for its regulations to predict and accommodate every conceivable circumstance. Consequently, it has historically provided mechanisms to grant exemptions or waivers where application of the regulation would not serve the public interest and no undue risk to the public health and safety would occur as a result of not requiring literal adherence to a particular requirement.

In several recent adjudicatory proceedings reviewed by the Commission, it has become evident that it would be desirable to attempt to state clearly the circumstances where the Commission believes that exemptions are warranted for the guidance of applicants, licensees, the staff and the public.

The Commission wishes to emphasize that it expects the intent of its regulations to be met and normally this requires conforming to the regulations as stated. The Commission recognizes, however, that there are circumstances where on balance it would not be equitable or in the public interest to require literal adherence to regulations particularly where to so require would not result in an improvement in overall safety or a reduction in risk to the public. The objective of the proposed rule is to identify the criteria to apply in such circumstances and to provide a means for considering the equities so that consistent regulatory decisions can be made concerning exemptions to Commission regulations.

The authority of an administrative agency to provide for exemptions from its regulations is well-established.[1] In *U.S.* v. *Allegheny-Ludlum Steel Corp.*, Justice Rehnquist stated that:

> It is well established that an agency's authority to proceed in a complex area . . . by means of rules of general application entails a concomitant authority to provide exemptions procedures in order to allow for special circumstances. 406 U.S. 742, 755 (1972).

However, judicial decisions also reject the approach of granting exemptions indiscriminately. As described by Judge Leventhal in *WAIT Radio* v. *FCC*:

> The agency may not act out of unbridled discreation or whim in granting waivers any more than in any other aspect of its regulatory function. 418 F.2d 1153, 1157 (D.C. Cir. 1969). *See also, Basic Media Ltd.*, v. *FCC*, 559 F.2d 830, 833. (D.C. Cir. 1977); *Mary Carter Paint Co.* v. *FTC*, 333 F.2d 654, 660 (5th Cir. 1964) (concurring opinon).

The courts have cited several permissible rationales for the granting of exemptions. In *U.S.* v. *Allegheny-Ludlum Steel Corp.*, *supra*, the Supreme Court cited "special circumstances" as a rationale for granting exemptions. In *WAIT Radio*, the D.C. Circuit believed that an exemption or waiver provision might account for considerations of "hardship, equity, or more effective implementation of overall policy." *Supra*, at 1159. In *Basic Media*, *supra*, the D.C. Circuit stated that any rule of general applicability will involve particular cases of hardship for which an agency would grant an exemption. Similarly, in *Gulf Oil Corp.* v. *Hickel*, 435 F.2d 440 (D.C. Circuit 1970), the court found that a provision for adjustment in cases of extreme hardship is a meaningful component of a regulatory scheme. Another rationale was provided in *Industrial Broadcosting Co.*, v. *FCC*, 437 F.2d 680 (D.C. Cir. 1970) where the court held that the desired flexibility in the regulatory process is maintained by requiring the agency to take a hard look at novel proposals, i.e., where the person seeking a waiver can demonstrate that his or her circumstances are substantially different from those which have been carefully considered in the rulemaking proceeding from which an exemption is desired.

In conformance with the principle that a means of granting relief from regulations should be provided, 10 CFR 50.12(a) of the Commission regulaitons provides that:

> (a) The Commission may, upon application by any interested person or upon its own initiative grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest. To obtain an exemption to Appendices G and H to this part, the requirements of paragraph 50.60(b) of this part must be met in addition to the requirements of this paragraph.

At this point, it should be noted that 10 CFR 5012(b) establishes a separate exemption procedure to permit the carrying out of construction activities, normally prohibited by 10 CFR 50.10, prior to the issuance of a construction permit.[2] The § 50.12(b) procedures are not of concern here and are left undisturbed by this proposed rulemaking.

In reviewing § 50.12(a) requests for exemptions, the focus of the NRC staff ("staff") has been on whether any undue risk would result from the granting of a particular exemption. This determination was, in general, the result of a qualitative engineering analysis of the purpose of the regulatory requirement and of the specific methods specified in the regulation for achieving the regulatory purpose. The staff would then compare the proposed method of operation to ensure that the regulatory purpose was satisfied and that the method to be used in a particular case was, under the particular circumstances before the staff, appropriate and technically sound as a method for accomplishing the regulatory purpose. In recent years when probabilistic quantitative assessment techniques have been available, these techniques, along with engineering judgment, have been used to ensure that the exemption involved was acceptable from a safety standpoint. In summary, the staff would evaluate an exemption request to determine if there was a justifiable reason for the proposed exemption and, in addition, whether adequate protection of the public health and safety would be maintained if the exemption were granted.

In addition, the staff viewed the Commission's regulatory framework as containing a reasonable amount of flexibility, with various requirements applicable only for certain modes of operation, and operation at certain times and power levels. For a typical power reactor under operating license review, the staff normally would recognize that, while the plant was ready for low power operation, power ascension or even initial full power operation, the plant might not fully comply with each and every NRC regulation. In these

[1] *See, Allegheny Ludlum Steel Corp.* v. *U.S.*, 406 U.S. 742, 755 (1972); *WAIT Radio* v. *FCC*, 418 F.2d 1153, (D.C. Cir. 1969); *Gulf Oil Corp.* v. *Hickel*, 435 F.2d 440, 447, (D.C. Cir. 1970); *Industrial Broadcasting Co.* v. *FCC*, 437 F.2d 680, 683 (D.C. Cir. 1970); *Basic Media Ltd.* v. *FCC*, 559 F.2d 830 (D.C. Cir. 1977).

[2] For a thorough discussion of the application of 10 CFR 50.12(b), *see, In the Matter of United States Department of Energy, Project Management Corporation, Tennessee Valley Authority* (Clinch River Breeder Reactor Plant) CLI–83–1, 17 NRC 1 (1983). Note that 10 CFR 2.758(b) of the Commission's regulations allows a party to an adjudicatory proceeding involving an initial licensing decision to petition for a waiver or exemption from the application of a Commission regulation. The sole ground for such a waiver is that special circumstances in the particular proceeding are such that application of the regulation would not serve the purposes for which the regulation was adopted. Section 2.758(b) is also unaffected by this proposed rulemaking.

circumstances, "non-compliances" typically were dealt with by license conditions requiring completion of installation, testing, or further analyses before proceeding to a particular power level ("Prior to exeeding 5% power * * *") or by a particular time ("By the first refueling outage * * *"). The effect on safety of such temporary "non-compliances" was evaluated by the Staff and discussed and justified in the staff safety evaluation report or supplement thereto. In situations where the noncompliances would be corrected in a relatively short time and did not prevent a finding of adequate safety, the staff would condition the operating license so as to mandate that the requirements be met at a later time or before a particular power level rather than expressly consider or grant an exemption from the regulations for the period of operation prior to reaching the time or power level at which the deficiency was to be corrected. In issuing operating licenses, the staff only considered and explicitly granted exemptions in instances of long-term or permanent non-compliance with the regulations and where, of course, the staff could find that the standards for granting an exemption in 10 CFR 50.12(a) were satisfied. Note that the proposed rule, when it becomes effective, would eliminate the existing practice of granting temporary "non-compliances" without expressly granting an exemption under 50.12(a).

The Commission's recent decision on an exemption request for the Shoreham nuclear power plant,[3] represented a departure from past staff practice in the exemption area. In Shoreham, the Commission requested the applicant, in addressing the determinations to be made under the 10 CFR 50.12(a) exemption criteria, to includle a discussion of:

1. The "exigent circumstances" that favor the granting of an exemption under 10 CFR 50.12(a) should it be able to demonstrate that, in spite of its noncompliance with GDC 17, the health and safety of the public would be protected.

2. Its basis for concluding that, at the power levels for which it seeks authorization to operate, operation would be as safe under the conditions proposed by it, as operation would have been with a fully qualified onsite A/C power source.

In the context of exemptions related to plant operations, these determinations regarding "exigent circumstances" and "as safe as" are not explicitly stated in 10 CFR 50.12(a). Although the Commission later specified that *Shoreham* was only to apply to the particular circumstances of that case, the decision did underscore the need to review existing Commission practice in the exemption area. The proposed rule is an attempt to fashion a comprehensive, consistent, practicable, and appropriate framework for reviewing exemption requests, based on past staff practice and on the Commission's concerns, as evidenced in the *Shoreham* decision and related discussions.

[3] *In the Matter of Long Island Lighting Company* (Shoreham Nuclear Power Station, Unit 1), CLI–84–8, slip op., (May 16, 1984) (hereinafter "Shoreham").

II. The Proposed Rule

The proposed rule retains the existing criteria of § 50.12(a) in a slightly modified form, as general standards for the granting of exemptions. Under proposed § 50.12(a)(1), the Commission may grant exemptions which:

> are authorized by law, will not present an undue risk to the public health and safety, are consistent with the common defense and security, and are in the public interest.

As in the existing rule, an exemption must be "authorized by law." Apart from the very fact of granting the exemption relief itself, the granting of the exemption cannot be in violation of other applicable laws, such as the Atomic Energy Act, or the National Environmental Policy Act.

In a departure from the text of the existing rule, the proposed rule would require a finding that the exemption will not "present an undue risk to the public health and safety" and would be "consistent with the common defense and security." These criteria provide an explicit recognition of traditional staff practice in evaluating the safety implications of a particular exemption. It is anticipated that this evaluation will consider such factors as compensatory measures, length of time that the exemption will be in effect, and stage of plant operation (i.e., fuel loading, low power, full power, etc.). The Commission believes that the "not endanger" language in the current rule was never intended to embody any special standards for exemptions that differed from the statutory standards that licensing must provide adequate protection to the health and safety of the public and be in accord with the common defense and security. The "no undue risk" standard of the proposed rule is a refinement of the statutory standard that reflects current staff practice in the exemptions area.

As is currently required by § 50.12(a), the proposed rule would also require that the exemption be in the "public interest." However, in recognition of the Commission's decision in *Shoreham, supra*, the Commission wishes to explicitly state that the public interest determination will consist of a consideration of the special circumstances that justify the exemption. Apart from those related conditions set forth in proposed § 50.12(a)(2), discussed *infra*, that are specific applications of "special circumstances," this determination would be confined to the consideration of the equities of the situation, similar to those cited in the *Shoreham* decision, including the stage of the facility's life, any financial or economic hardships, any unusual difficulties in complying with the regulation, any internal inconsistencies in the regulation, the applicant's good faith effort to comply with the regulation from which the exemption is sought, the public interest in adherence to the Commission's regulations, and the safety issues involved.

The Commission notes that because the criteria in proposed § 50.12(a)(1) will now include consideration of hardships or unusual difficulties, as well as the level of safety, it is deleting the provision from existing § 50.12(a) on additional requirements for exemptions from the fracture toughness requirements of 10 CFR Part 50, Appendices G and H. A corresponding deletion has been made to 10 CFR 50.60.(b).

In addition to the general standards of proposed § 50.12(a)(1) the Commission is proposing to add a new § 50.12(a)(2), which would require that one of several conditions exist before an exemption could be granted. The Commission believes that these conditions represent situtations in which it would be reasonable to grant an exemption, provided that the general standards of § 50.12(a)(1) are also met. These conditions were selected on the basis of exemption criteria that have been noted by the courts with approval (special circumstances, hardship, equity, more effective implementation of overall policy, circumstances substantially different from those considered in the rulemaking proceeding) and on the basis of examples from past Commission exemption practice where the circumstances underlying the exemption appeared to be relevant and appropriate for exemption relief.[4] The Commission would emphasize that the conditions in proposed § 50.12(a)(2) constitute a specific application of either the safety criterion or the public interest (special circumstances) criterion stated in the general standards of proposed § 50.12(a)(1). Although an exemption request may satisfy one of the conditions in proposed § 50.12(a)(2), the

[4] As noted by the D.C. Circuit in *WAIT Radio v FCC*, 418 F.2d 1153, 1159, (D.C. Cir. 1969): Sound administrative procedures contemplates waivers, or exemptions granted only pursuant to a relevent standard . . . best expressed in a rule that obviates discriminatory approaches. . . . The process viewed as a whole leads to a general rule, and limited waivers or exemptions granted pursuant to an appropriate general standard.

general criteria in proposed § 50.12(a)(1) must *also* be satisfied. For example, proposed § 50.12(a)(2)(iii) establishes a condition that "alternative or compensatory means exist to achieve the underlying purpose of the rule." Although the exemption request may satisfy this specific condition, it must also satisfy the general public interest (special circumstances) criterion of proposed § 50.12(a)(1) to justify the granting of the exemption. The Commission's objective in establishing the conditions of § 50.12(a)(2) is to impose limits on the type of exemption requests that can be granted. The addition of § 50.12(a)(2) is intended to reaffirm and strengthen the existing NRC policy and practice of evaluating and granting exemptions in a judicious and discriminating manner.

Proposed § 50.12(a)(2) would require that one of the following be satisfied before an exemption could be granted:

- Application of the regulation in the particular circumstances would be in conflict with other rules of the Commission; or
- Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule; or
- Alternattive or compensatory means exist to achieve the underlying purpose of the regulation;
- The exemption would result in an overall benefit to the public health and safety that compensates for any decrease in safety that may result from the grant of the exemption; or
- Application of the regulation would result in treatment of the particular applicant or licensee in a manner substantially different than other similarly situated applicants or licensees; or
- The exemption would provide only temporary relief from the applicable regulation; or
- There is present any other material circumstance not considered when the regulation was adopted.

Proposed § 50.12(a)(2)(i) would address those situations where application of a regulation in a particular circumstance would be in conflict with other rules or the Commission. This provision is designed for those rare situations where an applicant or licensee would be in the anomalous position of satisfying two or more conflicting requirements.

Proposed § 50.12(a)(2)(ii) would address those situations where application of the regulations in the particular circumstances is not necessary to achieve, or would not serve, the underlying purpose of the rule. This would include those situations considered in requests for exemptions under 10 CFR 2.758(b), where circumstances peculiar to that case, as opposed to any alleged generic inadequacy of the regulation, may result in the frustration of the underlying purpose of the rule. For example, *see, In the Matter of Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-653, 16 NRC 55 (1981); *In the Matter of Metropolitan Edison Company* (Three Mile Island Nuclear Station, Unit No. 1), CLI-80-16, 11 NRC 674 (1980); *In the Matter of Duke Power Company* (Catawba Nuclear Station, Units 1 and 2), CLI-79-9, 2 NRC 180 (1985).

Proposed § 50.12(a)(2)(iii) addresses situations where alternative or compensatory means exist to achieve the underlying purpose of the regulation. This would allow an exemption request to be considered where it could be shown that satisfactory alternative or compensatory mechanisms exist to achieve the regulatory objective. It must be understood here that the underlying purpose of the rule should be something more specific than achieving adequate safety protection. Otherwise all of the safety requirements in 10 CFR Part 50 become subject to open litigation, and the exemption process becomes open ended. Rather, the specific objective of the regulation must be ascertained from the rule itself or the underlying rulemaking proceeding (for example, the specific purpose of 10 CFR 50.46 would be assuring a coolable core during and after postulated loss-of-coolant accidents).

Proposed § 50.12(a)(2)(iv) would address situations where the exemption would result in an overall benefit to health and safety. This provision would focus on those circumstances where, on balance, the exemption would actually result in a net increase in overall safety or quality of plant operations.

Proposed § 50.12(a)(2)(v) would address those situations where the application of the regulation would result in treating a particular applicant or licensee in a manner substantially different than other similarly situated applicants or licensees. This is intended to provide equitable treatment to applicants or licensees who, because of some unusual circumstance, are affected in a manner different than that of other similarly situated licensees or applicants. For example, *see In the Matter of Duke Power Company* (Catawba Nuclear Station, Units 1 and 2), CLI-79-9, 2 NRC 180 (1975).

Proposed § 50.12(a)(2)(iv) establishes a condition where the exemption would provide only temporary relief from the applicable regulation. This would cover the so-called "schedular" exemption where the relief sought is limited to a specific amount of time or until a specific event occurs. The applicant's good faith efforts to comply with the required schedule would be one of the factors considered under § 50.12(a)(1) in determining whether to grant the exemption.

Proposed § 50.12(a)(2)(vii) establishes a category of any other material circumstances not considered when the regulation was adopted. Although the Commission believes that the conditions in proposed § 50.12(a)(2)(i) through (vi) will cover most requests in which an exemption could reasonably be granted, proposed § 50.12(a)(2)(vii) recognizes that there may be circumstances, which could not have been foreseen in developing the conditions in proposed § 50.12(a)(2)(i) through (vi), in which it would be equitable to provide relief from the regulations. In these cases, after documentation of a material circumstances not considered when the regulation was adopted and meeting the general criteria, including "no undue risk", in proposed § 50.12(a)(1), an exemption could issue. However, this provision would also require the Executive Director for Operations to consult with the Commission before the exemption could be granted.

The Commission would once again exphasize that although one of the above provisions of proposed § 50.12(a)(2) may be satisfied, the exemption request must still be evaluated in the overall context of the general standards in § 50.12(a)(1). It is conceivable that one of the conditions in § 50.12(a)(2) will be satisfied, but the general standards of § 50.12(a)(1) cannot be met.

The Commission directs the staff to utilize existing staff practice, pre-*Shoreham*, in evaluating exemptions, pending the effective date of this rulemaking.

Separate Views of Commissioner Asselstine

Commissioner Asselstine would like comments on the following proposed rule as an alternative to that proposed by the Commission:

Section 50.12 Specific exemptions.

(a)(1) The Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of the regulations in this part.

(2) The Commission will not consider granting an exemption unless special circumstances are present. Special circumstances are present whenever:

(i) compliance with the regulations would be inconsistent with some other Commission requirement;

(ii) compliance with the regulation would decrease overall facility safety, or would not scheive or not be necessary to achieve the purpose of the regulation;

(iii) compliance would result in undue hardship or other costs that are significantly in excess of those contemplated when the regulation was adopted, or that are significantly in excess of those incurred by others similarly situated;

(iv) a compliance issue is raised late in the licensing review that cannot be fully resolved in a timely fashion despite good faith efforts;

(v) compliance would result in applicant or licensee being treated in a manner significantly different from others similarly situated; or

(vi) there is present any other material circumstance not considered when the regulation was adopted.

(3) No exemption will be granted unless the Commission finds that it would be authorized by law and would be in accord with the common defense and security, and that there would be no undue risk to the health and safety of the public.

Finding of No Significant Environmental Impact

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule is not a major Federal action significantly affecting the quality of the human environment. The proposed rule modifies the criteria for the consideration of exemption requests under 10 CFR Part 50. The adoption of such criteria does not have an environmental effect in and of itself. The potential environmental impact of a specific exemption will be evaluated at that time, as appropriate.

Paperwork Reduction Act

This proposed rule does not contain a new or amended information collection requirement subject to Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). Existing requirements were approved by the Office of Management and Budget, approval number 3150–0011.

Regulatory Analysis

The Commission has prepared a draft regulatory analysis on this proposed regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The draft analysis is available for inspection in the NRC Public Document Room, 1717 H Street NW, Washington, DC. Single copies of the analysis may be obtained from: F.X. Cameron, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone 301–492–8689.

The Commission requests public comment on the draft regulatory analysis. Comments on the draft analysis may be submitted to the NRC as indicated under the **ADDRESSES** heading.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule, if adopted, will not have a significant economic impact upon a substantial number of small entities. The proposed rule primarily affects commercial power reactor licensees and license applicants, none of whom constitute a "small entity."

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

For the reasons set out in the preamble, and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is proposing to adopt the following amendments to 10 CFR Part 50.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 continues to read as follows:

Authority: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, 202, 206, 88 Stat. 1242, 1246 as amended (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Section 50.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2952 (42 U.S.C. 5851). Sections 50.57(d), 50.58, 50.91, and 50.92 also issued under Pub. L. 97–415 Stat. 2071, 2073 (42 U.S.C. 2133, 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 50.80–50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 50.100–50.102 also issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10(a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10(b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, 50.73, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. In § 50.12, paragraph (a) is revised to read as follows:

§ 50.12 Specific exemptions.

(a) The Commission may, upon application by an interested person or upon its own initiative grant exemptions from the requirements of the regulations of this part, which—

(1) Are authorized by law, will not present an undue risk to the public health and safety, are consistent with the common defense and security, are in the public interest, and

(2) Meet one of the following—

(i) Application of the regulation in the particular circumstances would be in conflict with other rules of the Commission; or

(ii) Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule; or

(iii) Alternative or compensatory means exist to achieve the underlying purpose of the regulation; or

(iv) The exemption would result in an overall benefit to the public health and safety that compensates for any decrease in safety that may result from the grant of the exemption; or

(v) Application of the regulation would result in treatment of the particular applicant or licensee in a manner substantially different than other similarly situated applicants or licensees; or

(vi) The exemption would provide only temporary relief from the applicable regulation; or

(vii) There is present any other material circumstance not considered when the regulation was adopted. If such condition is relied on exclusively for satisfying paragraph (a)(2) of this section, the exemption shall not be granted until the Executive Director for Operations has consulted with the Commission.

• • • • •

3. In § 50.60, paragraph (b) is revised to read as follows:

§ 50.60 Acceptance criteria for fracture prevention measures for lightwater nuclear power reactors for normal operation.

• • • • •

(b) Proposed alternatives to the described requirements in Appendices G and H of this part or portions thereof may be used when an exemption is granted by the Commission under § 50.12

Dated at Washington, D.C., this 23rd day of April, 1985.

Nuclear Regulatory Commission.

John C. Hoyle,

Assistant Secretary of the Commission.

50 FR 20574
Published 5/17/85
Comment period expires 7/16/85

10 CFR Part 50

Codes and Standards for Nuclear Power Plants

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Commission proposes to amend its regulations to incorporate by reference the Winter 1982 Addenda, Summer 1983 Addenda, Winter 1983 Addenda, Summer 1984 Addenda and 1983 Edition of Section III, Division 1, of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), and the Winter 1982 Addenda, Summer 1983 Addenda, and 1983 Edition of Section XI, Division 1, of the ASME Code. The sections of the ASME Code being incorporated provide rules for the construction of light-water-cooled nuclear power plant components and specify requirements for inservice inspection of those components. Adoption of these amendments would permit the use of improved methods for construction and inservice inspection of nuclear power plants.

DATES: Comment period expires July 16, 1985. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Written comments or suggestions may be submitted to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Copies of comments received may be examined in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Mr. G.C. Millman, Division of Engineering Technology, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 443-7860.

SUPPLEMENTARY INFORMATION: On February 7, 1983, the Nuclear Regulatory Commission published in the **Federal Register** (48 FR 5532) amendments to its regulation, 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," which incorporated by reference new addenda to the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code). The amendment revised § 50.55a to incorporate by reference the Winter 1981 Addenda to Division 1 rules of Section III, "Rules for the Construction of Nuclear Power Plant Components," and Division 1 rules of Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Code. On November 4, 1983, the Commission published in the **Federal Register** (48 FR 50878) an amendment to § 5055a to incorporate by reference the Summer 1982 Addenda to Section III, Division 1, of the ASME Code. The ASME did not publish a Summer 1982 Addenda to Section XI. On March 15, 1984, the Commission published in the **Federal Register** (49 FR 9711) an amendment to § 5055a to, among other things, incorporate by reference those subsections of Section III which apply to the construction of Class 2 and Class 3 components.

Since publication of the last ASME Code addenda incorporated by reference in § 5055a, the Winter 1982 Addenda, Summer 1983 Addenda, Winter 1983 Addenda, Summer 1984 Addenda, and 1983 Edition, to the ASME Code have been issued. The 1983 Edition is equivalent to the 1980 Edition, as modified by the Summer 1980 Addenda, Winter 1980 Addenda, Summer 1981 Addenda, Winter 1981 Addenda, Summer 1982 Addenda, and Winter 1982 Addenda. The Commission proposes to amend § 5055a to incorporate by reference all editions through the 1983 Edition and all addenda through the Summer 1984 Addenda that modify Section III, Division 1, and all editions through the 1983 Edition and all addenda through the Summer 1983 Addenda that modify Section XI, Division 1, of the ASME Code. The Summer 1983 Addenda for Section XI does not include any technical requirements related to Division 1, but is being included in the reference to avoid confusion that might occur with a lack of continuity in the addenda references.

Editorial revisions are proposed to correct certain existing footnote and paragraph references that are inconsistent with the last amendment (49 FR 9711) to this rule and to simplify the language. These editorial revisions are contained entirely in § 50.55a(g).

For facilities whose operating licenses were issued prior to March 1, 1976, this rule provides the effective date for implementing the inservice inspection requirements and for defining the effective edition and addenda of the Code for the start of the next one-third of a 120-month inspection interval after September 1, 1976. Since this one-third of an inspection interval has already been completed for all applicable facilities, it is proposed that the part of the rule addressing it in § 50.55a(g)(4)(iii) be deleted.

Power reactors for which a notice of hearing on an application for a provisional construction permit or a construction permit had been published on or before December 31, 1970, were permitted to use the rules for construction required by power reactors that had received their construction permits prior to January 1, 1971. It is proposed that § 50.55a(1) which covers this provision be deleted because it is no longer necessary. Section 50.55a(c)(4) provides that for these and other facilities that received a construction permit prior to May 14, 1984, the applicable Code Edition and Addenda for a component of the reactor coolant pressure boundary continue to be that Code Edition and Addenda that were required by Commission regulations for the component at the time of issuance of the construction permit.

Regulatory Analysis

The Commission has prepared a draft regulatory analysis on this proposed regulation. The analysis examines the cost and benefits of the alternatives considered by the Commission. The draft analysis is available for inspection in the NRC Public Document Room, 1717 H Street NW., Washington, DC. Single copies of the analysis may be obtained from Mr. G. C. Millman, Division of Engineering Technology, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commision, Washington, D.C., 20555, Telephone (301) 433-7860.

The Commission requests public comment on the draft regulatory analysis. Comments on the draft analysis may be submitted to the NRC as indicated under the ADDRESSES heading.

Paperwork Reduction Act Statement

This proposed rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C 3501 et seq.). This rule has been submitted to the Office of Management and Budget for review and approval of the paperwork requirements.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not, if promulgated, have significant economic impact on a substantial number of small entities. This proposed rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set

out in regulations issued by the Small Business Administration at 13 CFR Part 121.

Since these companies are dominant in their service areas, this proposed rule does not fall within the purview of the Act.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is proposing to adopt the following amendments to 10 CFR Part 50.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 continues to read as follows:

Authority: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 948, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, 202, 206, 88 Stat. 1242, 1244, 1246, as amended (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Section 50.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Sections 50.57(d), 50.58, 50.91 and 50.92 also issued under Pub. L. 97–415, 96 Stat. 2071, 2073 (42 U.S.C. 2133, 2239). Section 50.58 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80–50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Sections 50.100–50.102 also issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10(a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10 (b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, 50.73 and 50.78 are issued under 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. Section 50.55a is amended as follows:

Paragraph (b)(1) and the introductory text of paragraph (b)(2) are revised;

Reference to footnote 2 in paragraph (g)(1) is deleted;

References to footnote 3 in paragraph (g)(2) and in paragraphs (g)(3) (ii) and (iv) are removed;

Paragraphs (g)(3) (i) and (iii) are revised;

Paragraph (g)(4)(iii) is removed and reserved; and

Paragraph (i) is removed.

§ 50.55a Codes and standards.

* * * * *

(b) * * *

(1) As used in this section, references to Section III of the ASME Boiler and Pressure Vessel Code refer to Section III, Division 1, and include editions through the 1983 Edition and Addenda through the Summer 1984 Addenda.

(2) As used in this section, references to Section XI of the ASME Boiler and Pressure Vessel Code refer to Section XI, Division 1, and include editions through the 1983 Edition and Addenda through the Summer 1983 Addenda, subject to the following limitations and modifications:

* * * * *

(g) * * *

(3) * * *

(i) Components which are classified as ASME Code Class 1 shall be designed and be provided with access to enable the performance of inservice examination of such components and shall meet the preservice examination requirements set forth in Section XI of editions of the ASME Boiler and Pressure Vessel Code and Addenda * applied to the construction of the particular component.

* * * * *

(iii) Pumps and valves which are classified as ASME Code Class 1 shall be designed and be provided with access to enable the performance of inservice testing of the pumps and valves for assessing operational readiness set forth in Section XI of editions of the ASME Boiler and Pressure Vessel Code and Addenda * applied to the construction of the particular pump or valve or the Summer 1973 Addenda, whichever is later.

* * * * *

(4) * * *

(iii) [Reserved]

* * * * *

Dated at Bethesda, MD this 19th day of April 1985.

For the Nuclear Regulatory Commission.

Jack W. Roe,

Acting Executive Director for Operations.

50 FR 23025
Published 5/30/85
Extended comment period expires 7/12/85.

Decommissioning Criteria for Nuclear Facilities; Extension of Comment Period

See Part 30 Proposed Rule Making

≫50 FR 27006
Published 7/1/85
Comment period expires 9/2/85

≫Correction published 7/16/85. (50 FR 28815)

10 CFR Part 50

Modification of General Design Criterion 4 Requirements for Protection Against Dynamic Effects of Postulated Pipe Ruptures

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission is proposing to amend its regulations that require the protection of structures, systems and components important to safety against dynamic effects of postulated large pipe ruptures. Specifically, the proposed amendments would modify General Design Criterion 4 (GDC 4) to allow demonstration of piping integrity by analyses to serve as a basis for excluding consideration of dynamic effects associated with certain pipe ruptures. These analyses constitute what commonly is referred to as the "leak-before-break" concept. The modification will permit the selective removal of pipe whip restraints and jet impingement shields from operating plants, plants under construction and future plant designs, but will not impact other design requirements such as emergency core cooling system (ECCS) performance and containment design.

DATE: Comment period expires September 2, 1985. Comments received after this date will be considered if it is practical to do so, but assurance of consideration can only be given to comments received on or before this date.

ADDRESSES: Send comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attn: Docketing and Service Branch.

Deliver comments to: Room 1121, 1717 H Street, NW., Washington, D.C. between 8:15 a.m. and 5:00 p.m. weekdays.

Copies of the regulatory analysis, documents reference in this notice and comments received may be examined at: the NRC Public Document Room at 1717 H Street, NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: John A. O'Brien, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (301) 443–7854.

SUPPLEMENTARY INFORMATION:

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Background

Recent investigations using both deterministic and probabilistic analyses have demonstrated that for the specific case of the main primary loops of pressurized water reactors, double-ended guillotine or longitudinal ruptures are extremely unlikely. Attempts are currently underway to learn if these findings are applicable to other high energy piping systems, including piping in boiling water reactors.

These deterministic and probabilistic analyses depend on advanced fracture mechanics techniques, and include investigations of potential indirect failure mechanisms which could lead to pipe rupture. The objective of this approach (hereafter referred to as leak-before-break) is to demonstrate by analysis that the detection of small flaws, either by inservice inspection or by leakage monitoring systems, is assured long before the flaws can grow to critical or unstable sizes and lead to large break areas such as the double-ended guillotine pipe rupture.

General Design Criterion 4 (GDC 4), Appendix A, 10 CFR Part 50, states: "Criterion 4—Environmental and missile design bases. Structures, systems, and components important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, *including loss-of-coolant accidents.* These structures, systems, and components shall be appropriately protected against *dynamic effects, including the effects of missiles, pipe whipping, and discharging fluids, that may result from equipment failures and from events and conditions outside the nuclear power unit.*" (emphasis added)

The "Definitions and Explanations" section of Appendix A defines a "loss of coolant accident" as follows: "Loss of coolant accidents. Loss of coolant accidents mean those postulated accidents that result from the loss of reactor coolant at a rate in excess of the capability of the reactor coolant makeup system from breaks in the reactor coolant pressure boundary, *up to and including a break equivalent in size to the double-ended rupture of the largest pipe of the reactor coolant system.*" (emphasis added)

GDC 4 and the definition of a "loss of coolant accident" taken together have been conservatively applied to require all nuclear power reactor to employ massive pipe whip restraints and jet impingement shields to mitigate the dynamic effects of a postulated guillotine rupture in the largest pipes of the reactor coolant system. It can now be shown that these protective devices actually degrade overall safety because they reduce the effectiveness of inservice inspection, and because of difficulties and potential errors in installation or reinstallation, that could actually increase the likelihood of pipe rupture. The past serveral years have witnessed the development and experimental validation of analysis methods described above to demonstrate piping integrity in specific situations. This concept is fundamental in deciding whether or not guillotine pipe ruptures should be considered in formulating regulatory requirements.

The need and urgency for addressing the issue stem from the widespread acceptance of the analysis results and the research findings pertaining to pipe rupture coupled with increasing confidence in its applicability. Prior to the last few years, there was no sound technical basis for excluding certain pipe ruptures from the design basis. Now it is clear that it is possible to defend the exclusion of pressurized water reactor (PWR) primary loop double-ended guillotine pipe ruptures, and that the scope may be extened to other piping, including piping in boiling water reactors. Rulemaking action will promote investigations to determine which other situations will permit the removal of pipe whip restraints and jet impingement shields. Acceptance criteria for generally applying these results pertaining to leak-before-break have been published by the NRC staff in "Report of the U.S. Nuclear Regulatory Commission Piping Review Committee" NUREG–1061, Volume 3, and are being proposed by the American Nuclear Society in ANS–58.2 entitled "Design Basis for Protection of Light Water Nuclear Power Plants Against Effects of Postulated Pipe Rupture."

In summary, the requirements of GDC 4 as applied in the context of the definition of LOCA have led to a situation where protective devices have been added to nuclear power plants to forestall events which are now regarded as extremely unlikely. These protective devices reduce safety and increase worker radiation exposures. A need exists to allow exclusion from compliance with GDC 4 requirements of certain pipe ruptures when supported by acceptable analyses.

Regulatory History

In 1975, the NRC staff was informed of newly defined asymmetric blowdown loads that result by postulating rapid-opening double-ended ruptdres of PWR primary piping at the most adverse location in the piping system, that is, inside the reactor cavity. This problem was later designated as Unresolved Safety Issue A–2 (USI A–2). In June of 1976, the staff requested that the owners of operating PWRs evaluate their primary systems for these asymmetric loads. In response, owner groups submitted probabilistic studies and proposals for augmented inservice inspection. In a letter to the owners of all operating PWRs in January 1978, the staff concluded that the existing data base was not sufficient to support the findings of the probability studies and that inservice inspection alone was not an acceptable resolution.

As a consequence, plant analyses for asymmetric loads were submitted for review during 1980. It became clear after reviewing these analyses that some plants might require extensive modifications. In parallel with the preparation of the plant analyses, Westinghouse undertook a deterministic fracture mechanics evaluation to demonstrate that an assumed double-ended rupture is not a credible design basis event for PWR primary piping. These efforts eventually led to the submission of two reports: "Mechanistic Fracture Evaluation of Reactor Coolant Pipe Containing a Postulated Circumferential Throughwall Crack," WCAP 9558, Rev. 2., May 1981, and "Tensile and Toughness Properties of Primary Piping Weld Metal For Use In Mechanistic Fracture Evaluation," WCAP 9787, May 1981.

Also during 1981, the nine volumes of NUREG/CR–2189 entitled "Probability of Pipe Fracture in the Primary Coolant Loop of a PWR Plant" were published by Lawrence Livermore National Laboratory under contract to the Office of Nuclear Regulatory Research. Using different methodologies, both the Westinghouse and Lawrence Livermore National Laboratory studies supported the conclusion that double-ended pipe ruptures in PWR primary loop piping are extremely low-probability events. The staff reviewed the Westinghouse and Lawrence Livermore National Laboratory documents and accepted the findings presented therein. In the process of resolving USI A–2, both the Westinghouse and Livermore studies were presented to the Advisory Committee on Reactor Safeguards

(ACRS) to obtain its concurrence on the staff's evaluation of the results. In a June 14, 1983 letter to the NRC Executive Director for Operations, the ACRS stated:

We believe it is now appropriate and fitting to apply [fracture mechanics] to the analysis of Task Action Plan A–2 (USI A–2) dealing with the treatment of Asymmetric Blowdown Loads on Reactor Primary Coolant Systems. Fracture mechanics analysis clearly indicates that in PWR primary piping a substantial range of stable crack sizes exists between those which give detectable leaks, and the much larger size that results in a sudden failure. That is, there is no known mechanism in PWR primary piping material for developing a large break without going through an extended period during which the crack would leak copiously.

However, any relaxation of requirements to cope with double-ended guillotine break should be preceded by rigorous reexamination of the integrity of heavy component supports under all design conditions.

NRC's "Committee to Review Generic Requirements" (CRGR) has the responsibility to review and recommend to the Executive Director for Operations approval or disapproval of requirements to be imposed by the staff on power reactors. Because the application of leak-before-break technology in lieu of postulated large pipe ruptures is at variance with current NRC regulations, the proposed staff actions regarding USI A–2 were presented to the CRGR.

The CRGR views on the leak-before-break concept were reported in the minutes of CRGR meeting number 47, dated October 14, 1983, as indicated below:

The CRGR observed that the staff findings concerning leak before break have broad implications that go beyond resolution of the A–2 issue affecting 13 (sic) PWR licensees. These findings and the technical justifications in support of the findings could extend to other break locations and to assumptions previously made for piping loops and components of the reactor coolant systems, for piping connected to the coolant system and perhaps to the piping of other systems in the plant. This broader applicability of the leak-before-break criteria could have potentially large positive benefits in terms of the degree to which unneeded and potentially counter-productive hardware (e.g., piping restraints, jet imingment barriers etc.) continues to be required in plant construction. In this regard, the CRGR was advised by staff that the leak-before-break criteria could be more broadly extended to apply to the large size piping and components in the PWR reactor coolant system.

Generic letter 84–04, dated February 1, 1984, entitled "Safety Evaluation of Westinghouse Topical Reports Dealing With Elimination of Postulated Pipe Breaks In PWR Primary Main Loops" allowed licensees to request exemptions from the requirements of GDC 4 with respect to asymmetric blowdown loads resulting from discrete breaks in the primary main coolant loop (USI A–2). This use of exemptions, however, is limited and indicates a need to address the issue in rulemaking. This rulemaking is being initiated to permit this new approach to piping behavior and to obtain public comment on the proposed course of action.

Scope of Rulemaking

The direct dynamic effects of pipe rupture are missile generation, pipe whipping, pipe break reaction forces and discharging fluids. The influence of discharging fluids includes jet impingement forces, decompression waves within the intact portion of the piping system and pressurization in cavities, subcompartments and compartments.

There are two reasons for the decision to treat only dynamic effects in this rulemaking as opposed to other related requirements which could be interpreted to involve postulated pipe ruptures. First, loss-of-coolant accidents that place requirements on safety systems and structures include breaches in the reactor coolant pressure boundary other than the double-ended pipe rupture. Second, studies completed to date indicate that the only adverse safety implications associated with postulating pipe rupture are those resulting from consideration of the dynamic effects associated with pipe rupture. The placement of pipe whip restraints and jet impingement shields degrades plant safety, reduces the accessibility for and effectiveness of inservice inspection, increases inservice inspection radiation dosages and adversely affects construction and maintenance economics. Thus, significant safety benefits accrue when more realistic assumptions are made concerning the dynamic effects associated with postulated pipe ruptures. Current design margins in the primary loop heavy component supports are to be maintained. Existing heavy component supports designed for the dynamic effects of pipe rupture and seismic events are not affected. New plants will be designed with supports which have margins comparable and equivalent to those margins now present.

Proposed Rule

The language of the proposed amendment to the rule specified "conditions consistent with the design basis for piping." The design basis for the piping includes the Code of Federal Regulations, that is, applicable general design criteria, applicable sections of NUREG–0800 (Standard Review Plan), applicable Regulatory Guides and applicable industry standards (Section III of the ASME Boiler and Pressure Vessel Code). The proposed rules consists of added text at the end of GDC 4 which permits the use of analyses to exclude dynamic effects of certain pipe ruptures.

The amendment would permit the demonstration of piping integrity by analyses such as a fracture mechanism evaluation including the effects of fatigue and, if relevant, stress corrosion, in additon to an investigation of potential indirect failure mechanisms which could lead to pipe rupture.

Modification of the licensed configuration of operating plants by the removal of pipe whip restraints and jet impingement shields involves an unreviewed safety question under 10 CFR 50.59. Licensees of operating plants desiring to make modifications beyond the scope of this amendment will be required to submit a license amendment for NRC approval in accordance with revised General Design Criterion 4. The license amendment shall also include provisions for an augmented leakage detection system or other license conditons developed during the rulemaking action.

Similarly, applicants for an operating license seeking design modifications beyond those approved in Generic Letter 84–04 will be required to submit an amendment to the application for NRC approval in accordance with 10 CFR 50.35(c). The amendment to the application shall also include provisions for any license conditions developed during the rulemaking action.

The supporting safety analysis must demonstrate from the results of a fracture mechanics analysis that a substantial range of stable pipe crack sizes exist for an extended period which provide detectable leaks, and that the fluid systems piping will not rupture under these conditions consistent with the design basis for the piping.

It is estimated that this rulemaking action will reduce total occupational radiation exposure by amounts measured in tens of thousands of man-rem and that total cost savings will exeed $100 million.

Future Rulemaking

The amendment proposed below is limited to the primary coolant loop piping in pressurized water reactors. It is therefore equivalent in scope to the staff actions taken in Generic Letter 84–04 regarding USI A–2 and to the exemptions to GDC 4 which were authorized in that connection. The Commission will, in the near future, propose a broader amendment to GDC 4 which would allow application of the new technical approach outlined above to all reactor piping in all reactor types providing adequate technical

justification can be supplied for each new application.

Availability of Documents

≫ 1. Copies of NUREG/CR–1061Volume 3, may be purchased by calling (202) 275–2060 or (202) 275–2171 or by writing to the Superintendent of Documents, U.S. Government Printing Office, Post Office Box 37082, Washington, D.C., 20013–7082, or purchased from the National Technical Information Service, Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

2. ANS–58.2, "Design Basis for Protection of Light Water Nuclear Power Plants Against Effects of Postulated Pipe Rupture," is available from The American Nuclear Society, 555 North Kensington Avenue, La Grange Park, Illinois 60525.

3. A nonproprietary version of the Westinghouse report, "Mechanistic Fracture Evaluation of Reactor Coolant Piping Containing a Postulated Circumferential Throughwall Crack," WCAP 9558, Rev. 2, May 1981, is available n the NRC Public Document Room, 1717 H Street NW, Washington, D.C.

4. A nonproprietary version of the Westinghouse report, "Tensile nd Toughness Properties of Primary Piping Weld Metal For Use In Mechanistic Fracture Evaluation," WCAP 9787, May 1981, is available in the NRC Public Document Room.

≫ 5. Copies of NUREG/CR–2189 Volumes 1–9, may be purchased by calling (202) 275–2060 or (202) 275–2171 or by writing to the Superintendent of Documents, U.S. Government Printing Office, Post Office Box 37082, Washington, D.C. 20013–7082, or purchased from the National Technical Information Service, Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

6. ACRS Letter to William J. Dircks, NRC Executive Director of Operations, dated June 14, 1983, dealing with fracture mechanics, is available in the NRC Public Document Room.

7. Minutes of CRGR Meeting Number 47, dated October 14, 1983, are available in the NRC Public Document Room.

8. Generic Letter 84–04, dated February 1, 1984, is available in the NRC Public Document Room.

Finding of No Significant Environmental Impact

The Commission has determined under the National Environment Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule, if adopted, would not be a major Federal action significantly affecting the quality of the human environment and therefore an environmental impact statement is not required. Although certain plant hardware may not be reinstalled after removal for inspections, this will not alter the environmental impact of the licensed activities. It is anticipated that removed hardware would be stored at the plant site to be available for any potential future needs. The environmental assessment and finding of no significant impact on which this determination is based are available for inspection at the NRC Public Document Room, 1717 H Street, NW, Washington, DC. Single copies of the environmental assessment and the finding of no significant impact are available from John A. O'Brien, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone (301) 443–7854.

Paperwork Reduction Act Statement

This proposed rule does not contain a new or amended information collection requirement subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). Existing requirements were approved by the Office of Management and Budget approval number 3150–0011.

Regulatory Analysis

The Commission has prepared a draft regulatory analysis on this proposed regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. The draft analysis is available for inspection in the NRC Public Document Room, 1717 H Street NW, Washington, DC. Single copies of the analysis may be obtained from John A. O'Brien, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone (301) 443–7854.

Regulatory Flexibility Act Certification

As required by the Regulatory Flexibility Act of 1980, (5 U.S.C. 605(b)), the Commission certifies that this rule, if adopted, will not have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definitions of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

For reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is proposing to adopt the following amendments to 10 CFR Part 50.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

1. The authority citation for Part 50 continues to read as follows:

Authority: Secs. 103, 104, 161, 182, 183, 186, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended, sec. 234, 83 Stat. 1244, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2236, 2239, 2282); secs. 201, 202, 206, 88 Stat. 1242, 1244, 1246, as amended (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Section 50.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Sections 50.57(d), 50.58, 50.91, and 50.92 also issued under Pub. L. 97–415, 96 Stat. 2071, 2073 (42 U.S.C. 2133, 2239). Section 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Sections 50.80–50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Sections 50.100—50.102 also issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10(a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10(b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, 50.73, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. In Appendix A to Part 50, General Design Criterion 4 is revised to read as follows:

Appendix A—General Design Criterion for Nuclear Power Plants

• • • • •

Criteria

I. Overall Requirements

• • • • •

Criterion 4—Environmental and missile design bases. Structures, systems, and components important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents. These structures, systems, and components shall be appropriately protected against dynamic effects, including the effects of missiles, pipe whipping, and discharging fluids, that may result from equipment failures and from events and conditions outside the nuclear power units. *However, the dynamic effects associated with postulated pipe ruptures of primary coolant loop piping in pressurized water reactors may be excluded from the design basis when analyses*

demonstrate the probability of rupturing such piping is extremely low under design basis conditions.

* * * * *

Dated at Washington, D.C., this 25th day of June 1985.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

PART 50

DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

PETITIONS FOR RULE MAKING

39 FR 15900
Published 5/6/74
Comment Period expires 7/5/74
Partial Withdrawal published 7/22/76
≫ Withdrawn 9/15/83

[Docket No. PRM-50-10]

STATE OF NEW JERSEY—NUCLEAR ENERGY COUNCIL

Filing of Petition for Rule Making

Notice is hereby given that the State of New Jersey through its Nuclear Energy Council, by letter dated March 27, 1974, has filed with the Atomic Energy Commission a petition for rule making.

The petitioner requests that the requirements in Appendix E of 10 CFR Part 50 for emergency planning and interfacing by Commission licensees with State and local governments be adapted and applied to Commission licensees who are not otherwise subject to Appendix E and who receive, store, process, and/or distribute large quantities of radioactive materials routinely (e.g. firms which process radioactive drugs or kilocurie irradiators). The petitioner requests that rules be developed which will require clear identification of critical nuclides, critical pathways, and critical segments of the population potentially at risk with provisions made for chemical form and variability of critical nuclides as a function of varying product mix. The petitioner requests that the requirements of the Commission's "Reactor Site Criteria," 10 CFR Part 100 be suitably modified and incorporated into the proposed rule, and that the some definitions be reviewed and Protective Action Levels, to be set as either standards or guides by the USEPA or the State concerned, be adopted by reference.

The petitioner also requests that the exclusion of the "Class 9 accident" from consideration in licensing procedures currently in force be eliminated when new or novel siting or design considerations are involved and due consideration be given to countermeasures for the "Class 9 accident." The petitioner states that the following examples involve new or novel siting considerations: offshore floating nuclear plants; new reactor types such as the liquid metal fast breeder reactor; high temperature gas reactor; and metropolitan sites.

The petitioner states that its request is not intended to apply to light water reactors at land sites in operation, under construction, in the licensing stage or planned. Instead the request applies to the future and new or novel conditions only.

The petitioner also requests that the Commission's regulation "Operators' Licenses," 10 CFR Part 55 be amended to require periodic reexamination, and simulator training of reactor operators and senior reactor operators under reactor accident conditions, and that the scope of Part 55 be extended to include examination and licensing of professional and paraprofessional health physicists assigned to nuclear power stations and operators of facilities for disposal of liquid and solid radioactive wastes.

A copy of the petition for rule making is available for public inspection in the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. A copy of the petition may be obtained by writing the Rules and Proceedings Branch at the below address.

All interested persons who desire to submit written comments or suggestions concerning the petition for rule making should send their comments to the Rules and Proceedings Branch, Office of Administration-Regulation, U.S. Atomic Energy Commission, Washington, D.C., on or before July 5, 1974.

39 FR 25535
Published 7/11/74
≫ Withdrawn 9/15/83

[Docket No. PRM-50-10]

STATE OF NEW JERSEY-NUCLEAR ENERGY COUNCIL

Petition for Rule Making

On May 6, 1974, the Atomic Energy Commission published in the FEDERAL REGISTER (39 FR 15900) a notice that the State of New Jersey through its Nuclear Energy Council, by letter dated March 27, 1974, has filed with the Commission a petition for rule making (PRM-50-10).

By letter of June 10, 1974, Commissioner David J. Bardin of the Department of Environmental Protection, State of New Jersey, has furnished additional information to clarify the scope and intent of the petition. The letter of June 10, 1974, includes a request that the Commission publish verbatim the paragraph identified as No. 2 in Commissioner Barber's letter of March 27 with a typographical error noted in Commissioner Barber's letter of April 16 corrected. Paragraph No. 2, as corrected, reads as follows:

2. The exclusion of the Class 9 accident from consideration in licensing procedures now in force shall be eliminated when new or novel siting or design considerations are involved, and due consideration shall be given to countermeasures for the Class 9 accident. "New or novel" is best defined by examples. Examples of this are, among others: offshore floating nuclear plants; new reactor types such as the liquid metal fast breeder reactor (LMFBR) and high temperature gas reactor (HTGR); and metropolitan sites. The current exclusion is arbitrary and artificial. While the probability is extremely low, probability does not eliminate accidents and, in fact, admits to the possibility of occurrence. Consideration of this accident should gain public confidence and provide input information needed by State and local governments to develop conceptual and operational public-domain emergency plans up to and including evacuation. Analysis of this accident class will lead to better understanding and with knowledge, removal of reservations. By countermeasures is meant, by example, a core-catcher for which a literature albeit scanty exists. This request in no way implies extension to light water reactors at land sites in operation, under construction, in the licensing stage or planned. This recommendation applies to the future and new or novel conditions only.

The letter of June 10, 1974, also furnishes the following additional clarifying information:

Petitioner further wishes to state that this is not a request to classify the Class 9 accident as either credible or design basis and to require an analysis of this accident and potential countermeasures for each and every Application for a Construction Permit or Operating License which is docketed. Petitioner is seeking information on a generic basis, either through voluntary action or in accordance with rules of procedure which the AEC may promulgate permitting through accident-effects analysis the ability to adequately assess benefit vs. risk for new or novel designs and siting conditions. This information when viewed in light of the improbability for the Class 9 accident will permit the Petitioner and others concerned to make a more effective determination as to licensability.

Petitioner in the letter of Petition spoke to consideration of countermeasures and gave at least one example of potential countermeasures. This does not imply the potential for only a single countermeasure. For example, in addition to core catcher, countermeasures for a floating nuclear plant might include a properly designed totally enclosed breakwater and bottom seating of the facility or appropriate combinations of these approaches.

41 FR 24006
Published 6/14/76
Comment Period expires 8/13/76

[Docket No. PRM-50-17]

BOSTON EDISON CO., ET AL.

Filing of Petition for Rule Making

Notice is hereby given that Lowenstein, Newman, Reis, and Axelrad, 1025 Connecticut Avenue, N.W., Washington, D.C., by letter dated May 7, 1976, has filed with the Nuclear Regulatory Commission a petition for rule making on behalf of The Boston Edison Company, Florida Power and Light Company, and Iowa Light and Power Company.

The petitioners request the Commission to amend 10 CFR Part 50 and 10 CFR Part 2 of its regulations with respect to the issuance of amendments to operating licenses for production and utilization facilities. The petitioners state that in cases where the Commission determines that there is no "significant hazards consideration" the Commission may issue an amendment to an operating license followed by notice and publication in the FEDERAL REGISTER and, in such cases, interested members of the public who wish to object to the amendment and request a hearing may do so, but the request for hearing does not delay the effectiveness of the amendment.

The petitioners request the Commission to initiate a rule making proceeding to amend 10 CFR 50.58(b), 50.91, and 10 CFR 2.105(a)(3) in accordance with the suggested amendments set out in section V of the petition. The petitioner's draft amendments would specify criteria for determining when a proposed amendment to an operating license involves no "significant hazards considerations" and, therefore, may be issued by the Commission without prior public notice and opportunity for hearing.

The petitioners state that although questions frequently arise as to whether proposed amendments do or do not involve "significant hazards considerations" the Commission has not published criteria in its regulations or elsewhere for making such determinations, and although § 50.59 does set forth criteria for determining when a proposed change, test, or experiment involves an "unreviewed safety question," not every such question involves a "significant hazards consideration." The petitioners state further that the time has come for the Commission to publish criteria to guide its Staff in making "significant hazards considerations" determinations and that such guidance is essential today in light of the large number of reactors which are now in operation and which are scheduled for operation in the near future.

A summary of the petitions' proposed rule is set out in section IV of the petition as follows:

The amendments to Part 50 which petitioners proposed the Commission adopt require that the Staff take into consideration, in determining whether a proposed operating license involves a significant hazards consideration, whether the proposed amendment will (1) substantially increase the probability or consequences of a major credible accident or (2) reduce the plant's safety margins substantially below those previously evaluated and below those approved for similar facilities. If the Staff reaches a negative conclusion as to these two criteria, the proposed amendment will not involve a significant hazards consideration and prior public notice need not be given.

Petitioners submit that the criteria established in the proposed rule which requires a determination of substantiality with regard to reactor accidents and plant safety margins are consistent with statutory provisions and congressional intent as discussed above. Petitioners believe that these criteria will help reduce the uncertainty and unnecessary delay in the Commission's procedures for approving license amendments without compromising the rights of members of the public to participate in Commission proceedings involving significant safety considerations.

A copy of the petition for rule making is available for public inspection in the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

All interested persons who desire to submit written comments or suggestions concerning the petition for rule making should send them to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C 20555, Attention: Docketing and Service Section by August 13, 1976.

Dated at Washington, D.C. this 9th day of June 1976.

For the Nuclear Regulatory Commission.

SAMUEL J. CHILK,
Secretary of the Commission.

[FR Doc.76-17284 Filed 6-11-76;8:45 am]

41 FR 30222
Published 7/22/76

[Docket No. PRM-50-10]

OPERATORS LICENSES

New Jersey; Partial Withdrawal of Petition for Rule Making

Notice is hereby given that the Nuclear Regulatory Commission has received notice from the State of New Jersey, Department of Environmental Protection, withdrawing the portion of its petition for rule making (PRM-50-10) pertaining to changes to Part 55 "Operators' Licenses." (May 6, 1974, 39 FR 15900; July 11, 1974, 39 FR 25535)

The State of New Jersey petitioned the Atomic Energy Commission to, among other things, amend Part 55 to require periodic reexamination, and simulator training of reactor operators and senior operators under reactor accident conditions, and that the scope of Part 55 be extended to include examination and licensing of professional and paraprofessional health physicists assigned to nuclear power stations and operators of facilities for disposal of liquid and solid radioactive waste.

By telegram dated April 19, 1976, the petitioner has withdrawn the portion of the petition pertaining to Part 55 from further consideration by the Nuclear Regulatory Commission.

Copies of the petition and the telegram withdrawing a portion of the petition are available for public inspection at the Commission's Public Docket Room at 1717 H Street, NW., Washington, D.C.

42 FR 25785
Published 5/19/77
Comment Period expires 7/18/77

[Docket No. PRM-50-20]

FREE ENVIRONMENT, INC., ET AL.

Filing of Petition for Rule Making

Notice is hereby given that Louis J. Sirico, Jr., Esquire, has filed with the Nuclear Regulatory Commission a petition for rulemaking dated April 25, 1977, on behalf of Free En ironment, Inc.; Citizens United for Responsible Energy; the Iowa Public Interest Research Group; the Good News General Store Cooperative; the New Pioneer Cooperative Society; the Iowa Federation of Women's Clubs; the Women's International League for Peace and Freedom, Des Moines Branch; and Citizens for Environmental Action.

The petitioners request the Commission to amend its regulation "Licensing of Production and Utilization Facilities," 10 CFR Part 50, before proceeding with any processing of license applications for the Central Iowa Nuclear Project, to require that:

1. Nuclear reactors be located below ground level; and

2. Nuclear reactors be housed in sealed buildings, within which permanent heavy vacuums are maintained, and

3. A full-time federal employee, with full authority to order the plant to be shut down in case of any operational abnormality, always be present in a nuclear generating station; and

4. The Central Iowa nuclear project and other reactors be sited at least 40 miles from major population centers.

The petitioners refer to the petition for rulemaking (PRM–50–19) filed with the Commission on January 21, 1977, by the Connecticut Citizens Action Group, et al., for arguments and documentation to support this petition (PRM–50–20).

The petitioners state that:

Briefly, the placing of reactors underground has been recommended by nuclear proponent Dr. Edward Teller and others; housing reactors in sealed buildings is practiced by Canada in CANDU reactors as a safety measure; placing a full-time Federal employee on the premises with authority to order a shutdown, and also locating reactors in sparsely populated areas, have been recommended by numerous citizens' groups, with the latter of these two being endorsed in non-binding NRC guidelines for reactor siting.

In the exercise of its continuing responsibility to provide adequate protection for the health and safety of the public and to carry out its licensing and related regulatory functions in a manner which will assure that nuclear power plants are constructed and operated in accordance with strict safety standards, the Commission has work under way on two of the matters addressed in the petition. Since information on this work may be of interest to persons desiring to comment on the petition, a brief description of it is provided in this notice.

In the spring of 1975, the Commission contracted for a study on the underground siting of nuclear power reactors. A report on the results of this study is expected to be completed by mid-1977. This report will address a portion of the factors that must be considered in determining the overall utility of underground siting of nuclear power plants.

In November 1976, the Commission staff undertook an assessment of the feasibility of instituting a program of full-time inspection at operating reactors. This assessment, which contains an analysis of various alternatives for inspecting operating reactors, including as one of the alternatives the placement of a full-time NRC employee in the control room of each nuclear power plant, also is expected to be completed by mid-1977.

A copy of the petition for rule making is available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. 20555.

A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

All interested persons who desire to submit written comments or suggestions concerning the petition for rule making should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch, by July 18, 1977.

42 FR 37458
Published 7/21/77
Comment Period expires 9/19/77

[Docket No. PRM–50–21]

NORTHERN STATES POWER CO. AND WISCONSIN ELECTRIC POWER CO.

Filing of Petition for Rulemaking

Notice is hereby given that Gerald Charnoff, Esquire, and Jay E. Silberg, Esquire have filed with the Commission on behalf of the Northern States Power Co., and the Wisconsin Electric Power Co. a petition for rulemaking dated June 2, 1977.

The petitioners request the Commission to amend 10 CFR 50.34(c) so as to include plant security information within the definition of Restricted Data, or alternatively within the definition of National Security Information, to amend 10 CFR 2.905 so as to assure that discovery of plant security information is subject to the protection of Subpart I to 10 CFR Part 2, to amend Subpart I to 10 CFR Part 2 to explicitly recognize that its protection extends to information not under Commission control, and to delete 10 CFR 2.790(d)(1).

It is the view of the petitioners that the requested amendments would afford to plant security information the protection against unauthorized disclosure afforded by Subpart I to 10 CFR Part 2, protection commensurate with the sensitivity of the information.

A memorandum in support of proposed rule making is attached to the petition which sets forth the need, and the statutory and regulatory basis for the proposed rule requested by the petitioners.

A copy of the petition for rule making is available for public inspection in the Commission's Public Document Room, 1717 H Street NW., Washington, D.C.

A copy of the petition for rulemaking may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

All interested persons who desire to submit written comments or suggestions concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch by September 19, 1977.

42 FR 40063
Published 8/8/77
Comment period expires 10/7/77
(extended to 11/4/77)
(extended to 1/3/78)

[Docket No. PRM–50–22]

PUBLIC INTEREST RESEARCH GROUP, ET AL

Filing of Petition for Rulemaking

Notice is hereby given that William B. Schultz, Esquire, and John Abbotts, Esquire, have filed with the Nuclear Regulatory Commission a petition for rulemaking dated July 5, 1977, on behalf of the Public Interest Research Group (PIRG), Community Action Research Group (CARG), Critical Mass Energy Project, Environmental Action, Inc., and New York Public Interest Research Group (NY PIRG).

The petitioners request the Commission to initiate rulemaking to promulgate regulations for nuclear power plant decommissioning which would require plant operators to post bonds, to be held in escrow, prior to each plant's operation, to insure that funds will be available for proper and adequate isolation of radioactive material upon each plant's decommissioning. The petitioners state that the regulations should also require that nuclear power plants already in operation establish plans and immediately post bonds, to be held in escrow, to insure proper decommissioning.

The petitioners state that a formula should be established for setting an adequate bond to cover the costs of guarding and/or disposing of decommissioned power reactors, both for reactors which have been licensed and for those which will be licensed in the future, and that the Commission should establish general procedures to be followed in isolating radioactive components from decommissioned reactors.

The petitioners state that at the end of its useful life, a nuclear power reactor and associated structures are contaminated with radioactive isotopes that take thousands of years to decay and which will require several millions of dollars to isolate. It is the view of petitioners that the proposed regulations would insure that the power companies which operate reactors, and not future generations, bear the cost of decommissioning. The petitioners contend also that since decommissioning will not occur until after the 40-year operating license has expired, and may require substantial capital expenses for hundreds of years thereafter, companies which are now financially stable may not have the capacity to pay decommissioning and guardianship costs when necessary.

A copy of the petition for rule making is available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

All persons who desire to submit written comments or suggestions concerning the petition for rule making should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, attention: Docketing and Service Branch by October 7, 1977.

42 FR 55506
Published 10/17/77
Comment period extended to 11/4/77
(extended to 1/3/78)

[Docket No. PRM–50–22]

PUBLIC INTEREST RESEARCH GROUP, ET AL.

Extension of Comment Period

On August 8, 1977 the Nuclear Regulatory Commission published in the FEDERAL REGISTER (42 FR 40063) a notice that a petition for rulemaking had been filed with the Commission by the Public

Interest Research Group (PIRG), Community Action Research Group (CARG), Critical Mass Energy Project, Environmental Action, Inc., and New York Public Interest Research Group (NYPIRG). By letter of October 7, 1977, Mr. John Abbotts of the Public Interest Research Group indicated that the following groups have requested participation as co-petitioners: Arizonans for Safe Energy, Citizens United Against Radioactive Environment (CURE), Environmental Action Foundation, New Mexico Public Interest Research Group (NMPIRG), North Anna Environmental Coalition, and Texas Public Interest Research Group (TexPIRG).

The petitioners requested the Commission to initiate rulemaking to promulgate regulations for nuclear power plant decommissioning which would require plant operators to post bonds, to be held in escrow, prior to each plant's operation, to insure that funds will be available for proper and adequate isolation of radioactive material upon each plant's decommissioning. The petitioners stated that the regulations should also require that nuclear power plants already in operation establish plans and immediately post bonds, to be held in escrow, to insure proper decommissioning.

In view of a request from LeBoeuf, Lamb, Leiby and MacRae for additional comment time, the Commission is hereby extending the time for submitting written comments or suggestions concerning the petition for rule making to November 4, 1977. Any written submissions should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch.

A copy of the petition is available for public inspection in the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

42 FR 59574
Published 11/18/77
Comment period extended to 1/3/78

[Docket No. PRM 50-22]

PUBLIC INTEREST RESEARCH GROUP, ET AL.

Second Extension of Comment Period

On August 8, 1977 the Nuclear Regulatory Commission published in the FEDERAL REGISTER (42 FR 40063) a notice that a petition for rule making had been filed with the Commission by the Public Interest Research Group (PIRG), Community Action Research Group (CARG), Critical Mass Energy Project, Environmental Action, Inc., and New York Public Interest Research Group (NYPIRG. By letter of October 7, 1977 Mr. John Abbotts of the Public Interest Research Group indicated that the following groups have requested participation as co-petitioners: Arizonans for Safe Energy, Citizens United Against Radioactive Environment (CURE), Environmental Action Foundation, New Mexico Public Interest Research Group (NMPIRG), North Anna Environmental Coalition, and Texas Public Interest Research Group (TexPIRG).

The petitioners requested the Commission to initiate rule making to promulgate regulations for nuclear power plant decommissioning which would require plant operators to post bonds, to be held in escrow, prior to each plant's operation, to insure that funds will be available for proper and adequate isolation of radioactive material upon each plant's decommissioning. The petitioners stated that the regulations should also require that nuclear power plants already in operation establish plans and immediately post bonds, to be held in escrow, to insure proper decommissioning.

In response to a request from LeBoeuf, Lamb, Leiby and MacRae, the Commission extended the time for submitting comments to November 4, 1977 (42 FR 55506).

Several comments received by the Commission on the petition have expressed the view that state utility rate commissions are the appropriate authorities for considering and resolving such matters as decommissioning financing. In order for the Commission to further obtain information concerning the role of state utility rate commissions in the matter of decommission financing, comments and views are being requested from these authorities. Therefore, the Commission is again extending the time for submitting written comments or suggestions concerning the petition for rulemaking. The comment period is hereby extended to January 3, 1978. Any written submissions should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch.

Copies of the petition and the comments may be inspected in the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

45 FR 7653
Published 2/4/80

[Dockets Nos. PRM-50-25 and PRM-50-25a]

State of Illinois and the Porter County Chapter of the Izaak Walton League of America, Inc., et al.

Notice is hereby given that the State of Illinois and the Porter County Chapter of the Izaak Walton League of America, Inc.; Concerned Citizens Against Bailly Nuclear Site; Businessmen for the Public Interest, Inc.; James E. Newman and Mildred Warner, by petitions dated December 20, 1979, have requested the Nuclear Regulatory Commission (NRC) to amend or rescind subsection 50.55(b) of the Commission's regulations in 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

Subsection 50.55(b) provides the procedure and basis for extending the completion date for the construction or modification of a nuclear generating plant, as outlined below. The petitioners request that § 50.55(b) be amended or rescinded to permit consideration of a broad range of issues in a proceeding to determine whether the completion date for a construction period should be extended.

Subsection 50.55(b) provides that if proposed construction or modification of a facility is not completed by the latest completion date allowed by a permit, the permit will expire. The subsection provides, however, that the NRC will extend the completion date for a reasonable time upon "good cause" for the delay being shown. As a basis for extending the date, § 50.55(b) provides that the Commission will consider ". . . developmental problems attributable to the experimental nature of the facility or fire, flood, explosion, strike, sabotage, domestic violence, enemy action, an act of the elements, and other acts beyond the control of the permit holder. . . ."

The petitioners request the Commission to

> " . . . A. amend or rescind 10 CFR § 50.55(b) and B. promulgate a regulation which requires that a "good cause" proceeding concerning a requested amendment of a construction permit to extend the latest construction completion date, . . . consider whether the permittee has shown good cause for the continued construction of the plan[t] in light of all the circumstances at the time of considering the application. The Commission should determine that "good cause" should not be limited to the reasons why construction was not completed by the latest completion date in the construction permit.

The petitioners note that section 185 of the Atomic Energy Act permits construction permit extensions only upon good cause shown. They assert that by limiting consideration to reasons why construction was not completed, the statutory purposes of requiring consideration of "good cause" for the construction would be frustrated and would be a violation of section 185 of the Act.

The petitioners assert also that the application of § 50.55(b), if it is interpreted in a way which limits consideration to the reasons why construction was not completed by the latest completion date in the permit, ". . . would frustrate the statutory purpose of requiring that good cause be shown for an extension." The petitioners request that a rule be established which reflects the statutory purpose of section 185 of the Atomic Energy Act, and that a regulation which is in violation of this statutory purpose should be rescinded or amended.

Simultaneously with the filing of the petition, the petitioners filed (a) a Petition for Leave to Intervene in the NRC proceeding which is considering a request of the Northern Indiana Public Service Company (NIPSCO) for an extension of the completion date for Bailly Generating Station, Nuclear 1; and (b) a Petition for Waiver of or Exception to 10 CFR 50.55(b). The petitioners request that if the relief requested by either of these petitions is granted, then the Petition for Rulemaking may be considered moot. If this relief is not granted, the petitioners request suspension of the Bailly proceeding pending disposition of their Petition for Rulemaking.

The petitions from the State of Illinois and the Porter County Chapter of the Izaak Walton League of America, et al., have been assigned Docket Numbers PRM-50-25 and PRM-50-25a, respectively.

Copies of the petitions for rulemaking, the petitions to intervene, and the petitions for waiver are available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, DC. Copies of the petitions may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

All persons who desire to submit written comments or suggestions concerning the petitions for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch by April 4, 1980.

For further information contact: Joseph M. Felton, Director, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone 301-492-7211.

45 FR 73080
Published 11/4/80
Comment period expires 1/5/81

10 CFR Part 50

[Docket No. PRM-50-29]

Electric Utilities; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Publication of petition for rulemaking from electric utilities.

SUMMARY: The Nuclear Regulatory Commission is publishing for public comment a petition for rulemaking filed before the Commission on September 16, 1980, by Electric Utilities. This petition, which has been assigned Docket No. PRM-50-29, requests that the Commission address the issue of Anticipated Transients Without Scram (ATWS). ATWS has been designated an Unresolved Safety Issue by the Commission. An Anticipated Transient Without Scram occurs at a nuclear power plant if an abnormal operating condition ("anticipated transient") that should cause the plant's reactor protection system to initiate a rapid shutdown ("scram") of the reactor fails to function.

DATE: Comment period expires January 5, 1981.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document room, 1717 H Street, N.W., Washington, D.C. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: J. M. Felton, Director, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: 301–492–7211.

SUPPLEMENTARY INFORMATION:

Petitioner Electric Utilities (a group of companies which have over sixty nuclear power reactors currently in operation, under construction, or planned) requests that the Commission initiate rulemaking on the Anticipated Transient Without Scram (ATWS) issue through one of two approaches outlined in the petition.

Petitioner first requests that the Commission use a notice-and-comment rulemaking proceeding based on the publication of a proposed rule which the petitioner sets out in a proposed new § 50.47 to 10 CFR Part 50. Petitioner's proposed new § 50.47 reads as follows:

§ 50.47 Standards for Reduction of Risk from Anticipated Transients Without Scram (ATWS)

Each boiling or pressurized light-water nuclear power reactor for which a construction permit application was filed as of the effective date of the rule shall, as provided in paragraphs (a) through (c) of this section, reduce the risk from Anticipated Transients Without Scram (ATWS). The modifications required by this rule must be completed as expeditiously as is feasible, taking into account the time needed for design development and approval, equipment availability and the regional demand for power.

a. For boiling water reactors manufactured by the General Electric Company, provide (1) a means to trip the recirculation pumps upon receipt of a signal indicative of an ATWS event; (2) an independent, redundant and diverse electrical means to initiate a reactor scram upon receipt of a signal indicative of an ATWS event; and (3) a scram discharge volume system designed and installed such that it will have sufficient capacity to receive water exhausted by a full reactor scram.

b. For pressurized water reactors manufactured by Combustion Engineering, Inc. and the Babcock & Wilcox Company, provide (1) an alternate means to shut down the reactor that is diverse from and redundant to the electrical portion of the reactor protection system up to but not including the trip breakers, and (2) an automatic initiation of auxiliary feedwater independent of the reactor protection system.

c. For pressurized water reactors manufactured by the Westinghouse Electric Corporation, provide automatic initiation of turbine trip and auxiliary feedwater independent of the reactor protection system.

The petitioner states that "These proposed modifications are straightforward and well understood by the industry and the NRC Staff. Thus, they will not require great expenditures of resources for technical analysis, and they can be adopted in short order by a notice-and-comment rulemaking. Because a substantial portion of the industry is already willing to make these modifications *if* they will resolve the aTWS issue for existing plants, there is unlikely to be much regulatory effort required to imposed them. Most important of all, the proposed modifications clearly decrease the risk of ATWS without simultaneously increasing other, competing risks."

The petitioner states that, in regard to the development of a regulatory program to resolve the ATWS issue for new plants, "The [Electric] Utilities do not believe that an ATWS rule for new plants should be developed until the results of the degraded core rulemaking are known. Because the same issues and facts are crucial to each, ATWS is simply a subpart of the degraded core matter. • • • Accordingly, there seems to be no sound reason for seeking ATWS solutions for new plants in isolation from other degraded core events."

Petitioner also states that "The second prerequisite for an ATWS rule for new plants is the definition, either by policy statement or rulemaking, of a safety goal for nuclear power plant regulation • • • ATWS involves the reduction of risks that are already small. Since it is impossible to reduce risks to zero, the philosophical question always remains 'how safe is safe enough?' Although, of necessity, the lack of a safety goal has not precluded rulemaking in the past, it would be unwise to ignore safety goal guidance that should soon be available. Recent recognition that such guidance is essential suggests that it will be available in time to guide a new-plant ATWS rule."

Petitioner further states that "A third and final prerequisite for a new-plant [ATWS] rule is further work on probabilistic analysis. The extent to which safety analyses should rely on this technique, and the methodology to be used when it is applied, must be more clearly defined. • • • Efforts to these ends are already planned. • • •"

Finallly, in regard to its recommended ATWS rulemaking approach noted above, petitioner states that "The [Electric] Utilities recognize that, after the degraded core, safety goal and probabilistic analysis efforts have been completed, the Commission may see a need to augment the ATWS rule • proposed for *existing* plants. • • • We do not belive that this will prove to be the case. But if the Commission lacks our confidence, it may prefer to adopt the Utilities' proposed rule as an "interim" measure, to be finalized in the wake of these efforts, quite possibly at the same time that ATWS requisements are set for new plants."

The petitioner requests that if the Commission decides not to proceed with the rulemaking approach outlined above, an ATWS rulemaking proceeding with formal evidentiary hearings be conducted using certain adjudicatory procedures the petitioner feels are required. The petitioner's recommended adjudicatory procedures are as follows:

1. A hearing board to be appointed from the ASLB and ASLAB panels, composed of technically qualified experts who can bring a fresh approach to the evidence.

2. All relevant documents available to the NRC Staff, including internal memoranda and working papers, to be placed in a technical data bank and made available in one or more public document rooms.

3. A statement of issues to be prepared by the hearing board after statements of contentions are filed by parties and one or more prehearing conferences are held.

4. Written statements of position to be filed by all parties.

5. Written cross-statements to be filed by any party who wishes to respond to other parties.

6. A public hearing to be held, with all parties having an opportunity to present sworn witnesses and documentary evidence in support of their statements and cross-statements.

7. Questioning of witnesses to be conducted by the hearing board, with the parties allowed to submit suggested questions for the board to ask; cross-examination to be conducted by the parties if they specify the issues on which they wish to cross-examine and satisfy the board that cross-examination is needed to explore these issues adequately.

8. A proposed rule to be recommended by the hearing board to the Commission, along with a supporting discussion that explains the evidentiary basis for the rule.

9. Oral argument by the parties before the Commission.

46 FR 10501
Published 2/3/81

10 CFR Part 50

[Docket No. PRM-50-29]

Electric Utilities; Supplement to Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of receipt of supplement to petition for rulemaking PRM-50-29.

SUMMARY: The Nuclear Regulatory Commission has received a supplement to the petition for rulemaking filed by Electric Utilities concerning an Unresolved Safety Issue, Anticipated Transient Without Scram (ATWS). The supplement, which is dated January 5, 1981, contains a proposed appendix to 10 CFR Part 50 which the petitioner asks the Commission to consider in connection with its petition, PRM-50-29, which was published in the **Federal Register** for comment on November 4, 1980 (45 FR 73080). The petitioner's proposed appendix addresses the issue of Criteria for Evaluation of Scram Discharge Volume Systems for Boiling Water Reactors.

ADDRESSES: Copies of the supplement and the petition for rulemaking, PRM-50-29, are available for public inspection in the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. A copy of both documents may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

FOR FURTHER INFORMATION CONTACT: J. M. Felton, Director, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: 301-492-7211.

Dated at Washington, D.C., this 28th day of January 1981.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,
Secretary of the Commission.

46 FR 61484
Published 12/17/81

10 CFR Part 50

[Docket No. PRM-50-30]

Council on Energy Independence; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of receipt of petition for rulemaking from the Council on Energy Independence.

SUMMARY: The Commission is publishing for public comment this notice of receipt of a petition for rulemaking filed before the Commission on September 14, 1981, by the Council on Energy Independence. The petition, which has been assigned Docket No. PRM-50-30, requests that the Commission amend its regulations in 10 CFR Part 50 to extend the operating life of nuclear power plants.

DATE: Comment period expires February 16, 1982.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, DC. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docket and Service Branch.

FOR FURTHER INFORMATION CONTACT: J. M. Felton, Director, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492-7211.

SUPPLEMENTARY INFORMATION: The petitioner states that—

. . . The Commission has issued Operating Licenses (OL) for nuclear power plants for a term of 40 years from the date of Construction Permit (CP) issuance. Thus, in the 1960's and early 1970's the actual length of permitted operation for such a plant was around 35 years. This was due to the fact that it only took about 5 years to construct the plant and obtain an operating license. Obviously, this is no longer the case.

It now takes much longer to construct a plant and obtain an OL. Thus, the number of years the plant may be operating is shrinking. Accordingly, the useful and economic life of the plant is also diminished.

The petitioner requests that—

. . . The Commission propose a change to Section 50.51 which would restore the originally intended operating life of the plant. Two alternatives are obvious: (1) tie the expiration date of the OL to the date of issuance of the operating license . . . [or] . . . (2) lengthen the duration [of the license], e.g., the license will expire 50 years from date of issuance of the CP.

Finally, the petitioner states that—

It was obviously the Commission's original intent to allow a licensed plant to operate for a period of around 35 years. Due to the growing length of time between CP and OL this allowed operating time is shrinking and in many cases will result in an operating life of less than 30 years. While § 50.51 does allow for renewal of licenses this is not a given . . . and a licensee should not have to resort to such a request in order to be permitted to operate his facility for a time period originally intended by the Commission.

The Commission specifically requests public comment on the petitioner's first alternative ((1) Provide that the OL expire 40 years from the date of issuance). Comments on the petitioner's second alternative ((2) The license will expire 50 years from date of issuance of the CP) will not be helpful since the Commission is permitted by statute (42 U.S.C. 2133) to issue operating licenses for nuclear power plants for a period not to exceed 40 years. It is thus not within the power of the Commission to adopt, through rulemaking, a regulation which provides for a license term exceeding 40 years.

Dated at Washington, DC, this 14th day of December 1981.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,
Secretary of the Commission.

47 FR 12639
Published 3/24/82

10 CFR Parts 50 and 70

[Docket No. PRM-50-31]

Citizens' Task Force; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of receipt of petition for rulemaking from the Citizens' Task Force.

SUMMARY: The Commission is published for public comment this notice of receipt of a petition for rulemaking filed before the Commission on December 21, 1981, by Citizens' Task Force. The petition, which has been assigned Docket No. PRM-50-31, requests that the Commission amend its regulations in 10 CFR Parts 50 and 70 with respect to the level of emergency preparedness required to protect the health and safety of citizens and communities located near nuclear reactors.

DATE: Comment period expires May 24, 1982. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comment received on or before this date.

ADDRESSES: A copy of the petition for rulemaking is available for pubic inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, DC. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: John D. Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492-7086, or Toll Free: 800-368-5642.

SUPPLEMENTARY INFORMATION: The petitioner states, in part, that "* * * the [Citizens'] Task Force issued its final report * * * [which] documented a number of serious safety and health problems that could arise with the completion and operation of * * * reactor(s) stating:

It is agreed that a radiation dose low enough to produce no effect has not been identified. In other words, all levels of radiation may produce some effect on cells.

It is also accepted that no plant works perfectly 100 percent of the time. Intentional releases of radiation are routine. Accidental releases also occur * * *"

"The establishment of an effective notification and evacuation system around reactors is essential if the public is to have confidence in its own health and safety. Any inadequacy in the level of emergency preparedness around nuclear reactors can be ameliorated only if the regulations for the current level of preparedness are changed * * *"

The petitioner requests that the Commission amend its regulations to require the following:

1. That the present ten-mile EPZ radius be extended to twenty miles and include any towns bordering on or partially within this zone * * *

2. That all [such] communities with a population in excess of 5000 persons be provided by the respective utility with the funding to:

a. Purchase, install and operate radiological monitoring equipment, and;

b. Reach and maintain the level of emergency and radiological preparedness deemed necessary by the affected municipalities.

3. That utilities be required to finance the emergency planning efforts of the municipalities around nuclear reactors.

The petitioner states that its request is based upon the following premises:

1. Emergency planning and preparedness in support of commercial nuclear power plants is presently inadequate and incapable of providing an acceptable level of radiological and emergency preparedness.

2. Current NRC regulations governing the level of emergency preparedness will not correct the present inadequacies in a timely or acceptable manner.

Dated at Washington, DC this 19th day of March 1982.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

47 FR 21847
Published 5/20/82

10 CFR Part 50

[Docket No. PRM-50-30]

Council on Energy Independence; Withdrawal of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Withdrawal of petition for rulemaking filed by the Council on Energy Independence.

SUMMARY: In a Federal Register notice published on December 17, 1981 (46 FR 61484), the Commission announced the receipt of and requested comments on a petition for rulemaking (PRM-50-30) filed by the Council on Energy Independence. The petition, which was dated September 11, 1981, requested that the Commission amend its regulations in 10 CFR Part 50 to extend the operating life of nuclear power plants by beginning the 40-year Operating License (OL) term at the date of issuance of the OL. By letter dated May 4, 1982, the petitioner has withdrawn its petition for rulemaking and requested that the Commission cease work on its proposed amendments to 10 CFR Part 50.

ADDRESSES: A copy of the petitioner's letter of withdrawal is available for public inspection in the Commission's Public Document Room, 1717 H Street, N.W., Washington, DC. A copy of the letter of withdrawal may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

FOR FURTHER INFORMATION CONTACT: John D. Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Telephone: (301) 492-7086 or Toll Free: 800-368-5642.

Dated at Bethesda, Maryland this 12th day of May 1982.

For the Nuclear Regulatory Commission.

William J. Dircks,

Executive Director for Operations.

47 FR 27371
Published 6/24/82

10 CFR Part 50

[Docket No. PRM-50-32]

Ohio Citizens for Responsible Energy Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of receipt of petition for rulemaking from Ohio Citizens for Responsible Energy.

SUMMARY: The Commission is publishing for public comment this notice of receipt of a petition for rulemaking filed before the Commission on March 22, 1982, by Ohio Citizens for Responsible Energy. The petition, which has been assigned Docket No. PRM-50-32, requests that the Commission amend its regulations in 10 CFR Part 50 to require applicants for construction permits and operating licenses for nuclear power plants to provide for design features to protect against the effects of electromagnetic pulse (EMP).

DATE: Comment period expires August 23, 1982.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

All persons who desire to submit written comments concerning any portion, substantive or procedural, of the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: John D. Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: (301) 492-7086, or Toll Free: 800-368-5642.

SUPPLEMENTARY INFORMATION: The petitioner states that electromagnetic pulses are generated by high altitude nuclear explosions and can induce current or voltage through electrically conducting materials, thereby either destroying or temporarily disrupting control systems in a nuclear power plant that are essential for safety.

The petitioner requests that 10 CFR Part 50 be revised in the following manner:

1. *"Section 50.13*

This section should be amended to read as follows:

Attacks and destructive acts by enemies of the United States; and defense activities

(a) An applicant for a license to construct and operate a production or utilization facility, or for an amendment to such license, is not required, with the exception of (b) below, to provide for design features or other measures for the specific purpose of protection against the effects of (*i*) attacks and destructive acts, including sabotage, directed against the facility by an enemy of the United States, whether a foreign government or other person, or (*ii*) use of deployment of weapons incident to U.S. defense activities.

(b) Such applicant must, however, provide for design features to protect against the effects of electromagnetic pulse from whatever source."

"Appendix A of Subpart 50

This portion of the regulations should be amended to read as follows:

Criterion 4—Environmental and missle design bases. Structures, systems, and components important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents. These structures, systems, and components shall be appropriately protected against dynamic effects of missiles, pipe whipping, and discharging fluids, that may result from equipment failures and from events and conditions outside the nuclear power unit including, but not limited to electromagnetic pulses."

In support of its proposed amendments, the petitioner indicates that if OCRE's proposed regulations are adopted a serious loophole in nuclear power plant safety design would be closed with little hardship worked upon applicants since EMP-hardening circuitry can be incorporated without great expense.

Finally, the petitioner is an intervenor party in a nuclear power plant licensing proceeding currently before the Commission's Atomic Safety and Licensing Board Panel (*In the Matter of Cleveland Electric & Illuminating Co. et al.*—Perry Nuclear Power Plant, Docket Nos. 50-440 and 50-441). The petitioner requests that the Commission, pursuant to § 2.802(d) of its regulations, suspend those portions of the Perry licensing proceeding related to safety pending disposition of petition for rulemaking PRM-50-32.

List of Subjects in Part 50

Administrative practice and procedure, Antitrust, Classified information, Emergency medical services, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting Requirements.

Dated at Washington, D.C., this 18th day of June, 1982.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

47 FR 29252
Published 7/6/82

10 CFR Part 50

[Docket No. PRM-50-33]

National Emergency Management Association; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of Receipt of Petition for Rulemaking from the National Emergency Management Association.

SUMMARY: The Commission is publishing for public comment this notice of receipt of a petition for rulemaking dated March 17, 1982, which was filed with the Commission by the National Emergency Management Association. The petition, which has been assigned Docket No. PRM-50-33, requests that the Commission amend its regulations in 10 CFR Part 50 to reduce the frequency of emergency training exercises at nuclear power plants involving state and local government.

DATE: Comment period expires September 7, 1982.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, DC. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: John D. Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492-7086 or Toll Free: 800-368-5642.

SUPPLEMENTARY INFORMATION: The petitioner states that the National Emergency Management Association (NEMA), which is comprised of directors of state emergency services programs, believes that the current requirement for an annual exercise, at each nuclear power plant site within a state is imposing an impossible burden on state resources.

The petitioner requests that 10 CFR Part 50, Appendix E, section IV.F.1. be revised to read as follows:

"1. Each licensee at each site shall exercise annually its onsite emergency plan to test as much of the licensee emergency plan as is reasonably achievable.[1]

The licensee exercises shall include participation by offsite agencies at the following frequencies:

a. at least once every two years with full participation [2] by local agencies and with at least partial participation [3] by States within the plume exposure EPZ.

b. at least once every 7 years with full participation by local agencies within the plume exposure EPZ and full participation by States within the plume exposure and ingestion EPZs.

b.1. these exercises shall be more frequent than once every 7 years as necesssary to enable full participation in an exercise by each State within a plume exposure pathway EPZ at least once every two years.

In support of its proposed amendments to 10 CFR Part 50 the petitioner states that NEMA acknowledges the need for appropriate plans, training, drills, and exercises to prepare for accidents but feels that the requirement for an annual full-scale exercise is placing a financial burden on state and local governments that they will be unable to carry on a continuing basis.

Dated at Washington, DC this 30th day of June 1982.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

47 FR 50918
Published 11/10/82.

10 CFR Part 50

[Docket No. PRM-50-34]

State of South Carolina; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Receipt of Petition.

SUMMARY: The Commission is publishing for public comment this notice of receipt of a petition for rulemaking dated August 27, 1982, which was filed with the Commission by the State of South Carolina. The petition was docketed by the Commission on August 30, 1982, and has been assigned Docket No. PRM-50-34. The petitioner requests that the Commission amend its regulations in 10 CFR Part 50 to reduce the frequency of nuclear power plant emergency training exercises which require the participation of local government agencies.

DATE: Comment period expires January 10, 1983.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, DC. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: John D. Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Wasington, DC 20555, Telephone: (303) 492-7086 or Toll Free: 800-368-5642.

SUPPLEMENTARY INFORMATION: The petitioner states that local governments rely heavily on trained volunteer citizens to respond to emergencies. Thus, the current NRC requirement that a local government within the plume exposure pathway EPZ participate in at least one full-scale nuclear power plant emergency training exercise per year is, according to the petitioner, an undue burden on these volunteers since they would be participating in training exercises "on their own time."

The petitioner also states that while the county in which a nuclear power reactor is located derives revenue from the reactor owner to help offset the cost of an annual full-scale exercise, other affected counties derive little or no revenue from the reactor owner and for these counties the cost of annual full-scale exercise is an additional expense. The petitioner further states that most of the affected counties have a low economic base and the requirement for a full-scale exercise places an undue financial burden on county resources. The petitioner requests that the Commission revise Appendix E, section IV.F.1., of 10 CFR Part 50 to read as follows:

"1. Each licensee shall exercise at least annually the emergency plan for each site at which it has one or more power reactors licensed for operation. The licensee exercise shall include participation by offsite agencies at the following frequencies;

a. The State shall participate in a full-scale exercise annually. The State shall rotate its schedule of annual full-scale exercises so that the exercises are with a different facility (site) licensed in the State each year. There will be full participation by the State at least once every five years, with the ingestion exposure pathway partially or wholly within the State.

b. The local governments that are located within the 10-mile plume exposure EPZ of facility selected for the States full-scale exercise will participate along with that facility and the State in a full-scale exercise.

c. The local government agencies, when not scheduled to participate in a full-scale exercise, will exercise as a minimum its communications and warning procedures in conjunction with the nuclear facilities annual exercise."

Finally, the petitioner states that while affected local governments do not question the need for appropriate plans, exercises, and training, they have questioned the need for an annual full-scale exercise.

Dated at Washington, DC, the 2d day of November 1982.

Samuel J. Chilk,

Secretary of the Commission.

47 FR 51889
Published 11/18/82

≫ Comment period extended to 1/24/83.
48 FR 2982

10 CFR Part 50

[Docket No. PRM-50-35]

Union of Concerned Scientists; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of receipt of petition for rulemaking.

SUMMARY: The Commission is publishing for public comment this notice of receipt of a petition for rulemaking dated October 14, 1982, which was filed with the Commission by the Union of Concerned Scientists. The petition was docketed by the Commission on October 18, 1982, and has been assigned Docket No. PRM-50-35. The petitioner requests that the Commission amend its regulations in 10 CFR Part 50 to clarify the public's litigation rights in regard to offsite emergency planning for a nuclear power plant prior to issuance of a full power operating license.

DATE: Comment period expires January 17, 1983. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, DC. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555

All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: John Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: 301–492–7086 or Toll Free: 800–368–5642.

SUPPLEMENTARY INFORMATION: The petitioner states that a clarifying amendment is needed (in 10 CFR 50.47) to establish consistency in NRC's treatment of offsite emergency plans and that the current language in § 50.47 would allow serious and illegal infringement of the public's right to litigate health and safety issues under the Atomic Energy Act.

The petitioner proposes that a new paragraph (a)(3) be added to § 50.47 to read as follows:

§ 50.47(a)(3) "Throughout any period of low power operation or fuel loading, the licensing board will retain jurisdiction over the operating license proceeding and maintain an open hearing record. No license for operation at over 5% of rated power will be issued before the completion of adjudicatory hearings on all contested emergency planning issues, including defects in onsite and offsite emergency planning identified as a result of preoperational emergency preparedness exercises."

The petitioner states that its proposed amendment is necessary because § 50.47 currently provides that operating licenses for fuel loading and/or operation at up to 5% of rated power may be issued without NRC or FEMA review findings, or determinations concerning the state of offsite emergency preparedness or the adequacy of and capability to implement state and local offsite emergency plans. The petitioner further states that § 50.47 makes no provision for completion of adjudicatory hearing on the sufficiency of offsite planning before a full power license is issued.

The petitioner states that when the Commission amended § 50.47 on July 13, 1982 (47 FR 30232), to add the provision permitting fuel loading and/or operation at up to 5% of rated power without NRC or FEMA review, findings or determinations concerning offsite emergency preparedness, it set a new hurdle for intervenors in nuclear power plant licensing proceedings to leap in order to litigate emergency planning issues.

Finally, the petitioner states that the Commission has provided no rational basis, nor is there one, for treating offsite emergency planning contentions any differently than other licensing issues.

At a meeting held November 3, 1982, the petition was discussed by NRC representatives, the petitioner, and a representative of the Commonwealth of Massachusetts. At this meeting, general agreement was reached that the NRC did not intend the July 1982 amendments (see 47 FR 30232) to affect the overall consideration of emergency planning issues in full-power operating license proceedings, except in regard to offsite exercises. Hence, the Commission understands that the principal thrust of the petition lies in the last phrase of the proposed amendment: "* * * including defects in onsite and offsite emergency planning identified as a result of preoperational emergency preparedness exercises." The Commission is therefore particularly interested in public comment on this issue, namely, whether or not the offsite exercise need be held prior to closure of the hearing record in the full-power proceeding.

Dated at Washington, D.C., this 12th day of November 1982.

For the Nuclear Regulatory Commission.

John C. Hoyle,

Acting Secretary of the Commission.

47 FR 53030
Published 11/24/82

10 CFR Part 50

[Docket Nos. PRM–50–32A and PRM–50–32B]

Marvin I. Lewis and Mapleton Intervenors

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of Receipt of Petitions for Rulemaking.

SUMMARY: The Commission is publishing for public comment this notice of receipt of petitions for rulemaking filed before the Commission by Marvin I. Lewis and Mapleton Intervenors. The petitioners, both of whom request relief similar to that requested in PRM–50–32, ask that the Commission address the issue of Electromagnetic Pulse (EMP).

DATE: Comment period expires January 24, 1983.

ADDRESSES: A Copy of each petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street NW., Washington, DC. A copy of each petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

All persons who desire to submit written comments concerning any portion, substantive or procedural, of the petitions for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: John D. Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492–7086, or Toll Free: 800–368–5642.

SUPPLEMENTARY INFORMATION: Petitioners contend that electromagnetic pulses are generated by high altitude nuclear explosions and can induce current or voltage through electrically conducting materials, thereby either destroying or temporarily disrupting control systems in a nuclear power plant that are essential for safety. On June 24, 1982, the Commission published in the **Federal Register** (47 FR 27371) a notice of receipt of a petition for rulemaking (PRM–50–32) from the Ohio Citizens for Responsbile Energy (OCRE) concerning the Electromagnetic Pulse (EMP) issue. OCRE requested that the Commission amend 10 CFR Part 50, § 50.13, to specify that applicants for construction permits and operating licenses for nuclear power plants (and applicants for amendments to these permits and licenses) be required to provide for design features to protect against the effects of electromagnetic pulse. In addition, OCRE requested that Appendix A to 10 CFR Part 50 (Criterion 4) be amended to require that structures, systems, and components important to safety be protected against electromagnetic pulse. In support of the proposed amendments, OCRE indicated that if its proposed regulations are adopted a serious loophole in nuclear power plant safety design would be closed with little hardship worked upon applicants since EMP-hardening circuitry can be incorporated without great expense.

PRM-50-32A

Petitioner Marvin I. Lewis now asks (in PRM-50-32A) to join OCRE in petitioning the Commission for a rulemaking to address EMP. The petitioner proposes to amend the OCRE petition to include consideration of commerical, non-defense related, and non-accidental high altitude nuclear explosions.

The petitioner proposes to amend 10 CFR Part 50, Appendix A, Criterion 13, bny adding the following sentence: "Instrumentation shall be hardened to protect against electromagnetic pulse generated by a high altitude, nuclear explosion."

The petitioner is an intervenor party in a nuclear power plant licensing proceeding currently before the Commission's Atomic Safety and Licensing Board Panel *(In the Matter of Philadelphia Electric Company*—Limerick Generating Station, Units 1 and 2, Docket Nos. 50-352 and 50-353). The petitioner requests that the Commission, pursuant to § 2.802(d) of its regulations, suspend those portions of the Limerick licensing proceeding related to safety pending disposition of petition for rulemaking PRM-50-32A.

PRM-50-32B

Petitioner Mapleton Intervenors requests (in PRM-50-32B) that the Commission revise its regulations to address the EMP issue in essentially the same manner as requested by OCRE in PRM-50-32. The petitioner proposes to amend 10 CFR Part 50 in § 50.13 and Appendix A to include consideration of EMP in the design and licensing of nuclear power plants.

The petitioner is an intervenor party in a nuclear plant power licensing proceeding currently before the Commission's Atomic Safety and Licensing Board Panel *(In the Matter of Consumers Power Company*—Midland Plant, Units 1 and 2, Docket Nos. 50-329 and 50-330). The petitioner requests that the Commission, pursuant to § 2.802(d) of its regulations, suspend those portions of the Midland licensing proceeding related to safety pending disposition of petition for rulemaking PRM-50-32B.

The NRC staff is currently investigating the effect of EMP on nuclear power plants. The staff expects to report to the Commission on that investigation in December. This report, when available, should provide the Commission with generic information on the effects of EMP which can be included in its consideration of the petitioners' requests to suspend the safety-related portions of the licensing proceedings in Limerick and Midland.

The Commission would like to receive public comment on the specific items addressed in both PRM-50-32A and PRM-50-32B, and in addition, hereby reopens the comment period on PRM-50-32 to run concurrently with the comment period for PRM-50-32A and PRM-50-32B. Comments on these proposed suspensions of licensing proceedings may also be provided.

Dated at Washington, DC this 17th day of November, 1982.

For the Nuclear Regulatory Commission.

John C. Hoyle,

Acting Secretary of the Commission.

48 FR 2982
Published 1/24/83

10 CFR Part 50

[Docket No. PRM-50-35]

Union of Concerned Scientists; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Extension of comment period.

SUMMARY: On November 18, 1982 47 FR 51889, the NRC published for public comment a notice of receipt of a petition for rulemaking on emergency planning which petition was dated October 14, 1982, and filed with the Commission by the Union of Concerned Scientists. At the request of the UCS the NRC is extending the period for comment on the petition for rulemaking from January 17, 1983 to January 24, 1983.

DATE: Comments on the petition for rulemaking on emergency planning (47 FR 51889) must be submitted to the NRC by January 24, 1983.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: John Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: 301-492-7086 or Toll Free: 800-368-5642.

Dated at Washington, D.C. this 19th day of January 1983.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

≫ 48 FR 16691
Published 4/19/83

10 CFR Part 50

[Docket No. PRM-50-35]

Union of Concerned Scientists; Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Denial of Petition for Rulemaking.

SUMMARY: The Nuclear Regulatory Commission is denying a petition for rulemaking which requested that the Commission amend its emergency planning rules for nuclear power plants so that the results of the offsite emergency preparedness exercise held prior to full-power operation would be litigable in the operating license proceeding. The Commission is denying the petition because the requested amendment is unnecessary, contrary to sound administrative practice, and would add regulatory delays to the Commission's licensing process without a corresponding increase in public health and safety.

FOR FURTHER INFORMATION CONTACT: William M. Shields, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Phone: 301-492-8693.

SUPPLEMENTARY INFORMATION:

I. Background

On November 18, 1982, the Commission published in the **Federal Register** (47 FR 51889) a notice announcing the receipt of a petition for rulemaking filed by the Union of Concerned Scientists (UCS). The Commission indicated that the principal thrust of the petition was to ensure, via amendment of the Commission's emergency planning regulations in 10 CFR 50.47, that the results of the pre-operational offsite emergency preparedness exercise could be litigated in the full-power operating license proceeding.

The UCS petition seeks to reverse the effect of an amendment to 10 CFR 50.47 promulgated by the Commission on July 13, 1982 (47 FR 30232; notice of proposed rulemaking published December 15, 1981, 46 FR 61134). That amendment, in relevant part, added a sentence to 10 CFR 50.47(a)(2) which reads as follows:

> Emergency preparedness exercises (required by paragraph (b)(14) of this section and Appendix E, Section F of this part) are part of the operational inspection process and are not required for any initial licensing decision.

The effect of this amendment was to make clear that the record in the full-power proceeding could be closed, and a licensing decision rendered, prior to the

offsite emergency preparedness exercise. This exercise, however, had to be held prior to authority for full-power operation for the facility as had always been the case.

Presently pending before the Court of Appeals for the District of Columbia Circuit is UCS' direct challenge to the 1982 amendments, filed September 10, 1982. *(Union of Concerned Scientists v. NRC,* Docket No. 82-2053). The Commonwealth of Massachusetts has moved to intervene in this action, and also filed comments on the petition for rulemaking. Briefing in this case has been held in abeyance so that administrative action on the petition for rulemaking could be completed. A main concern of UCS was the NRC, by its July 1982 amendments, intended to alter the way emergency planning issues are litigated generally in license proceedings. At a meeting held November 3, 1982, between NRC and UCS representatives, NRC stated that, except for the exercise issue, the NRC did not intend this rule change to affect the way full-power proceedings were conducted. It was generally agreed that the principal thrust of the petition concerned the litigation of "effects in on-site and off-site emergency planning identified as a result of pre-operational emergency preparedness exercises." 47 FR 51889. The petition notice therefore highlighted this issue in seeking public comment.

II. Public Comments

A. Description of Comments Received on Petition

Seventy-eight comments were received on the UCS petition, representing a wide variety of opinions and sources. By source, the comments break down as follows: public interest groups—22, industry—19, States—3, Federal agencies—2, counties—1, universities—1, attorneys (other than those representing clients)—2, private citizens—28 (representing 93 persons). These comments in many cases focus on the same issues presented in the earlier rulemaking on the same subject, where 40 comments were received. In all, then, the Commision has received and considered 118 comments on the UCS petition.

In view of the large number of comments, pro and con, it is not feasible to respond to each individually. Instead, the analysis below will be organized by issue. The factors cited by commenters in favor of the UCS petition will be stated, each followed by a statement of the Commission's position. Because the Commission is denying the petition, it is not necessary for the Commission to respond to each of the arguments offered by commenters opposing the petition. Some of their arguments have been incorporated into the Commission's responses below.

All public comments—for this proceeding and for the previous rulemaking—are available for public inspection in the Commission's Public Document Room, 1717 H Street N.W., Washington, D.C.

B. Response to Public Comments

Issue 1: Emergency planning exercises should be subject to hearings before a license is issued because the exercise is a vital indicator of the actual state of emergency preparedness.

Commission response: The commission agrees that the full-scale offsite exercise is one important indicator of the actual state of emergency preparedness. For this reason, the Commission continues to require that the exercise be conducted, and significant deficiencies corrected or mitigated, before full-power operation is authorized for the facility.

From this it does not follow, however, that any benefit is to be gained from delaying the operating license hearing, as a matter of course, to incorporate the results of this exercise in the full-power operating license proceeding. As to all matters of public health and safety, the licensing boards' findings are predictive in that they often are based upon the design of the facility, the qualifications of the utility's management and operational staff, inspections, performance specification, etc., rather than demonstrated preformance. At the time the licensing board issues its decision authorizing a full-power license, many major plant systems have not been fully tested at or near the full-power operating levels necessary to show full-system performance. The full-scale exercise is analogous to the evaluation of plant systems at operating power levels during power ascension testing. Where problems are discovered, they are addressed before full commercial operation is achieved. On the other hand, the applicant's emergency plan is akin to the design of the facility. The task of the licensing board confronted with contested emergency planning and preparedness issues is to decide whether the plan meets the Commission's regulations as set out in 10 CFR 50.47 and Appendix E to Part 50 and to predict whether it can be implemented successfully. *See 47 FR at 30235.* As was stated above, both decisions are fully litigable before the board. This would include litigation of the planning process itself (i.e. the various technical and other judgments of the planners and the reviewers that underlie the plan itself and the predictions of implementation capability). The board may require changes or additions to the plan based upon the testimony presented. The 1982 amendment here challenged by UCS was only intended to affect the way in which emergeny planning issues are litigated by clarifying that the results of the exercise need not be litigated.

The full-scale offsite exercise is actually an indicator of two factors: the state of emergency preparedness at the time the exercise is conducted, and whether the emergency plan and the planning process are fundamentally sound. If the outcome of the exercise showed that the plan and the underlying judgments about its adequacy and capability of implementation were seriously flawed—as opposed to details of its implementation in that exercise not reflecting on the overall adequacy of the plan and its capability of implementation—reopening of the hearing record might be appropriate, coupled, of course, with delay of the full-power authorization. This matter was fully explained in the rulemaking notices for the amendment.

There are sound policy reasons for removing the full-scale exercise from the operating license proceeding. While these reasons were stated by the Commission in the previous rulemaking, they will be restated here for clarity. Contrary to the view of many comments supporting the UCS petition, the action was not taken merely to further limit the scope of the operating license proceeding. The Commission acknowledges that the public can play an important part in offsite emergency planning by participating in the operating license proceeding. This will continue to be the case. The Commission also believes that it is important, however, that the full-scale exercise be held as close in time as possible to commercial operation of the facility. This is necessary so that the licensee personnel who will be responsible for the commercial operation of the facility will be present at the site, familiar with the plant and its environs, and trained to carry out the emergency plan. As one moves back in time from commercial operation, these personnel will not, for the most part, be present. In addition, certain instrumentation to be relied on in emergencies may not be fully operational or calibrated. The safety of the plant would be better served by an exercise utilizing those licensee personnel who would have to carry out emergency procedures once the plant is licensed for commercial operation.

This being the case, it is clearly impractical to hold the full-power proceeding record open solely for the purpose of litigating the results of the full-scale offsite exercise held at a time

close to commercial operation. Even with the use of expedited procedures, months could be consumed while the results of the exercise are analyzed, testimony prepared, hearings held, findings made, and so on. This delay would occur without a commensurate safety benefit in the ordinary case. It is important, of course, to correct or resolve problems which are discovered as a result of the exercise. In most cases, this can be done prior to full power authorization. If the exercise shows serious problems that must be remedied, the Commission can delay full-power authorization until such problems are rectified. To the extent there are material facts in dispute, litigants in NRC proceedings would likely be heard on the impact of such serious defects on the NRC's ability to decide there is reasonable assurance that the plant could operate safely. As the Commission has stated on prior occasions, no facility will be permitted to achieve commercial power levels when there is doubt that the public health and safety will be protected in the event of an accident.

Moreover, deficiencies in the full-scale offsite exercise would not be suitable subjects for the adjudicatory setting. As was explained above, the function of the licensing board is to determine whether the emergency planning efforts reflected in the plan and its underlying basis and review meet the Commission's regulations. If some detail of a plan, *e.g.*, a hard telephone link to a State emergency office, does not operate properly during the exercise, the appropriate course of action is to remedy the problem by concrete action, not hold a hearing and hear the testimony of experts on why the system failed on the day in question. If it should occur, however, that some key aspect of the plan turns out to be inadequate or unworkable, or the judgments reflected in the planning process are untenable, or major revisions will be necessary, the hearing could be reconvened upon a showing that the Commission's standards for reopening have been met. This could be done, however, only where it is questionable that the Commission's regulations have been met. Where appropriate, any person may request that the Commission institute a proceeding to take immediate licensing action under 10 CFR 2.206. Such action could include, in extraordinary circumstances, suspension of the license pending correction of the deficiency.

Issue 2: Emergency planning issues generally will be removed from licensing adjudications under the current rule.

Commission Response: The Commission responded in depth to this contention in the notice of final rulemaking published July 13, 1982 (47 FR at 30233). The applicant for an operating license is required by 10 CFR 50.47 to submit a complete emergency plan for the facility. All aspects of the planning process may be litigated in the operating license proceeding. For example, one can assert that the planning standards in 10 CFR 50.47(b) have not been met. In the Commission's view, this does not constitute removal of emergency planning from the licensing process.

As was explained above, and to be very clear, the only aspect of emergency planning removed from the proceeding is the full-scale offsite exercise. This was done for reasons which will be explained in the response to the next issue. (See also the notices of proposed and final rulemaking in this proceeding.)

Issue 3: The public has no recourse to challenge decisions made following the exercise if the hearing record is already closed.

Commission Response: The only aspect of the Commission's procedures which was altered by the 1982 amendment at issue here was the inclusion, as a matter of course, of the results of the full-scale offsite exercise in the full-power operating license proceeding. The rule changes did not affect public participation in any other way under NRC regulations. It is true, as UCS asserts, that the other avenues of public intervention (*e.g.*, motions to re-open a hearing, petitions under 2.206) are conditioned by the need to show that such licensing actions are warranted by the facts in each case. This is nonetheless true of any other aspect of the facility which is tested prior to, or even after, achievement of commercial power levels. The comments raise no intrinsic safety reason which distinguishes the results of the offsite exercise from the result of testing the reactor coolant system at full capacity. If, in either case, minor problems were discovered, correction is needed but actions such as a re-opening of the hearing or suspension of the license would not be warranted. Major deficiencies in an exercise would be addressed by the NRC prior to full power authorization, but in any event the public could seek to participate and would be granted the opportunity to do so in appropriate circumstances.

The Commission's objective in the 1982 amendment was to improve the conduct of exercises by placing them as close in time to commercial operation as possible, not to eliminate public recourse in the event an exercise demonstrates serious defects in the emergency plan or planning process. The amendment was carefully limited to provide this result.

Issue 4: A utility might submit a faulty plan in the absence of public scrutiny in the hearing context, thus jeopardizing public safety.

Commission Response: The plan is addressed in the hearing process. An applicant for an operating license is required by NRC regulations (10 CFR 50.47 Appendix E) to submit an emergency plan which complies with the regulations and which conforms to other regulatory guidance supporting the regulations. The licensing board must be able to find that the existing plan and planning process do in fact, meet the regulations or whether, on the other hand, there is cause to withhold authorization of a license until suitable planning was demonstrated. Neither the petitioner nor commenters have shown in what way the Commission's action resulted in a diminution of safety in respect to emergency planning. In the Commission's veiw, it is not enough to assert, without more, that removal of a limited subject from the adjudicative phase of the licensing process necessarily equals a loss of protection of the public health and safety, or implies a loss of the public's right to recourse where the facts justify extraordinary licensing action.

Issue 5. The current text of 10 CFR 50.47(c) appears to allow submission of offsite plans after the record has closed. If so, this would remove such plans entirely from public scrutiny in view of the high standard which must be met to reopen a hearing.

Commission Response: This concern is the result of confusion over the work "should" in the Statement of Considerations which accompanied the 1982 amendments:

> The proposed rule does not eliminate any important substantive aspect of emergency planning from the operating license hearings. Whether an applicant satisfies the requirements of 50.47(a) and 50.47(b) is still an issue that may be raised and litigated in those hearings. In cases where such issues are raised, applicants' and State and local jurisdictions' emergency plans *should* be available for examination . . . (47 FR at 30233) (emphasis added).

The use of "should" was intended to convey the possibility that a plan or a part of a plan (*e.g.*, township or county) might not be available at the hearing if that jurisdiction has, for whatever reason, not yet completed a plan. In such cases, 10 CFR 50.47(c)(1) does allow the applicant to show that,

because of other compensating factors, public health and safety will be adequately protected because of other plans or evidence of preparedness. 45 FR 55402, 55403 (1980); Mt. Transcript pp. 3–12 (July 23, 1980) [Docket No. PR–50 (44 FR 75167), Vol. 9]. Where this situation occurs, intervening parties would have the opportunity to challenge the applicant's assertion. The word "should," however, should not be read to mean that the NRC now believes that plans meeting the rule's criteria need not generally be available at the hearing. In that sense, the use of "should" in the above-quoted section is overboard and could understandably lead to concern. To a certain extent, the comment reflects concern that the NRC intended to undercut adjudication of emergency planning generally. As explained in this document, that is not the Comission's intention. Furthermore, contrary to the suggestion in some comments that NRC Boards are using the July 1982 amendments in just that way, the Commission has not found a single instance where that was the case. The proffered example, the *Zimmer* proceeding, is simply inapposite because the Board never decided this issue as characterized by petitioner and commenters.

Issued 6: The 1982 amendment violates the Atomic Energy Act and the Administrative Procedure Act by denying the public the right to litigate the adequacy of offsite emergency plans.

Commission Response: This argument is based upon a flawed premise. The adequacy of offsite emergency planning and capability of implementation continues to be fully litigable in the operating license proceeding. Intervenors may challenge any aspect of this planning and its capability of implementation as not complying with applicable NRC and FEMA standards.

The Commission has the discretion to separate matters which properly belong in the licensing phase from those which belong in the post-adjudicative operational phase. If this were not true—and the petitioner and commenters do not so argue—the Commission would be obligated to hold open the hearing record until a plant had been fully tested at commercial power levels, given the real possibility that a plant system may not function as projected in the earlier stages of the safety hearing. Pre-operational testing is no less crucial to plant safety that the full-scale exercise is crucial to measuring emergency preparedness (see response to Issue 7 below). It is nonetheless clear that the record of the licensing proceeding must close on all matters at some logical point, and the Commission has judicially-recognized discretion to select that point on a rational basis. Neither UCS nor commenters supporting the UCS position have put forth convincing arguments why the full-scale offsite test of the emergency plans may not be placed in the "operational events" category. As explained above problems identified in the course of exercises will either demonstrate problems with actual preparedness (which may be corrected in a straightforward manner) or with the plan process. The examples of exercise deficiencies raised in the comments fall into the former category and are not different from other kinds of preoperational problems. In the absence of a showing to the contrary, the argument that the Commission is forbidden by statute to permit licensing board decisions prior to the conduct of the exercise cannot be accepted.

Issue 7: The comment from FEMA emphasizes the importance of the full-scale offsite exercise in overall emergency planning and preparedness.

Commission Response: The Commission completely agrees with the comment from FEMA which states, in part:

> FEMA wishes to reaffirm the importance and value of the joint exercise for FEMA's findings concerning the adequacy of offsite plans and preparedness. A full-scale joint exercise plays an important role and is necessary if FEMA is to certify in a finding that State and local governments are capable of protecting public health and safety in the event of an accident at a commercial nuclear power plant. The exercise gives FEMA observers the opportunity to assess the readiness, knowledge, and skills of State and local government personnel as they attempt to implement the actions outlined in the plan and the objectives of a scenario adopted for the exercise.
>
> Deficiencies that are identified during an exercise provide State and Local governments and opportunity to take corrective action through additional exercising and plan modification, thus improving preparedness.
>
> FEMA's primary concern is that completion of an adequate joint exercise continue as a requirement for a full-power nuclear power plant license. FEMA defers to NRC on whether this should be a matter for its hearing boards to deal with in their full-power proceedings.

As is clear from the discussion above and from the notices of rulemaking accompanying the 1982 amendment, no full-power operation will be authorized prior to the full-scale joint exercise. In addition, no license will issue if the exercise demonstrates significant deficiencies:

The public should recognize that the Commission does not intend to authorize the issuance of a full-power operating license if there has been a full-scale exercise which raises serious and significant deficiencies which have not been compensated for and which go to the fundamental nature of the plan itself. (Notice of Final Rule, 47 FR at 30234).

And while it is true that the evidentiary standard to re-open a closed record is high, it is not insurmountable. An intervenor in a licensing proceeding may request that the record be re-opened. If that option is unavailable, that person may request relief under 10 CFR 2.206. As FEMA suggests, the Commission should be able to make the determination whether a proceeding is necessary to examine the results of the exercise. The 1982 amendment objected to by UCS does no more than remove any doubt that the Commission may exercise this discretion on a case-by-case basis. Where the facts justify a further proceeding, one will be ordered. Where the exercise shows emergency planning to be fundamentally sound and in accord with the findings of the licensing board, further litigation as a matter of course would serve no purpose.

III. Findings

Upon a complete review of the record in this proceeding and in the rulemaking which resulted in the amendment placed in issue by UCS, the Commission finds nothing to indicate that it has erred either as a matter of law or as a matter of policy. Therefore, the Commission hereby denies PRM-50-35. As with pre-operational testing of safety systems, there are sound policy reasons for conducting the exercise as near in time as possible to commercial operation of the facility. The proper function of the adjudicative proceeding is to examine the emergency planning of the applicant and offsite jurisdictions and determine whether it meets NRC and FEMA standards. The Commission sees no benefit to be gained by delaying issuance of a full-power license for litigation over a basically successful exercise. It is within the Commission's legal discretion to prevent this result while at the same time enhancing the usefulness and credibility of the exercise by allowing the record to close in the proceeding prior to conduct of the exercise

Dated at Washington, DC, this 12th day of April, 1983.

For the Commission

Samuel J. Chilk,

Secretary of the Commission.

48 FR 24391
Published 6/1/83

10 CFR Part 50

[Docket No. PRM 50-24]

John F. Doherty; Denial of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Denial of Petition for Rulemaking.

SUMMARY: The Nuclear Regulatory Commission is denying a petition requesting that the Commission amend its regulations governing the domestic licensing of production and utilization facilities to specifically require prescribed action by the Commission in the event of objects falling from earth's orbit on the grounds that the requested amendments are unnecessary. The provisions of the Atomic Energy Act of 1954, as amended, permit the Commission to take actions of the kind outlined by the petitioner; the requested amendments are therefore unnecessary. Based on experience, the Commission has found its present practice of notification and monitoring the progression of natural or man-induced events that may impact the operation of licensed facilities is adequate. Further, the Commission is authorized to order licensees to act to protect health and minimize danger to life or property.

ADDRESSES: Copies of correspondence and documents cited below are available for public inspection and copying for a fee at the Commission's Public Document Room at 1717 H Street NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Mr. Kenneth Perkins, Chief, Incident Response Branch, Division of Emergency Preparedness and Engineering Response, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: 301 (492–4614).

SUPPLEMENTARY INFORMATION: In a submittal dated July 6, 1979, Mr. John F. Doherty filed with the Commission petition for rulemaking PRM-50-24.

The Petition

The petitioner requested that the Commission adopt a regulation which would state that it is the duty of the Commission to inform all holders of Class 103 licenses (production and utilization facility licensees) of any announcement by any Federal agency or department of predicted or expected falling objects from earth's orbit, whether the falling object is the responsibility of the announcing agency or the responsibility of a foreign nation. The petitioner also requested that the Commission adopt a regulation which specifies that the Commission inform and advise the affected licensees until a prediction of the most likely impact area(s) can be issued by the responsible department or agency. The petitioner requested that the Commission order plants near the probable impact area to be shut down.

Basis for Request

As the basis for the request, the petitioner stated that the Commission should specifically prepare for a possible occurrence of a situation similar to the Skylab incident in which orbiting objects of considerable size could be expected to fall to earth with considerable force.

Request for Comments on Petition

A Notice of Filing of Petition for Rulemaking was published in the **Federal Register** on August 16, 1979 (44 FR 47997). The comment period expired October 1, 1979. The Commission received one letter of comment in response to the notice.

The one commenter opposed the petition on the basis that adequate provisions currently exist within the regulations to permit the Commission to take the required actions should the health and safety of the public be jeopardized. These provisions include the authority to order that a licensed facility be shut down. The commenter also suggested that the proposal could result in the taking of unnecessary adverse action in the absence of a credible threat.

Disposition of Petition

The Commission already has the authority to take the actions the petitioner requests. For instance, the Atomic Energy Act of 1954, as amended, authorizes the Commission to "* * * prescribe such regulations or orders as it may deem necessary * * * to govern any activity authorized * * * including * * * restrictions governing the * * * operation of facilities * * * in order to protect health and to minimize danger to life or property." Consequently, a specific regulation that deals with objects falling from earth orbit and that prescribes actions on the part of the Commission is unnecessary.

External events may occasionally affect the routine operation of NRC-licensed production and utilization facilities. Within the framework of the current NRC licensing process, these events are considered in the siting and design of power reactors. Plants in operation may be subject to natural or man-induced events that warrant particular attention. The NRC is kept apprised of developing situations that have the potential to impact routine operation at power reactors. In the past, these situations have included events such as the Skylab reentry, the COSMOS 1402 reentry, the Mt. St. Helens eruption, hurricanes, and other severe environmental conditions.

As an example of an NRC response to a specific situation, in addition to the information notice that was issued to licensees during the Skylab reentry, the NRC response center was activated to monitor the situation and was prepared to act if necessary. NRC maintained contact with the Federal Emergency Management Agency (FEMA) and the National Aeronautics and Space Administration during the reentry process. Skylab debris fell on and near Australia. However, had Skylab "skipped" on reentry and continued for another partial orbit, its trajectory would have caused it to become a potential threat to a number of U.S. nuclear facilities. A large uncertainty existed at the time as to which Skylab orbit would be the last. Nuclear plant shutdowns were not ordered because: (1) The shutdown of a large number of facilities could have caused a potentially serious power disruption; (2) vital parts of nuclear power plants have substantial protection from external hazards, and (3) a direct strike on a nuclear power plant is extremely unlikely. Those NRC-licensed reactor facilities that were projected to be in the potential reentry path were alerted and advised to (1) have technical management available to augment staff

in the event of a problem, and (2) be prepared to cope with a loss of offsite power. The actions taken by the NRC during the Skylab incident demonstrate that the Commission was prepared to act in the appropriate manner to protect the health and safety of the public under its existing statutory authority and regulations and that sufficient reason does not exist to grant the petition in whole or in part.

Denial

Based on the above considerations, the Commission hereby denies the petition for rulemaking PRM 50–24, dated July 6, 1979, filed by John F. Doherty.

A copy of the petition for rulemaking, a copy of the letter of comment, and the Commission's letter of denial are available for public inspection and copying for a fee at the Commission's Public Document Room at 1717 H Street N.W., Washington, D.C.

Dated at Bethesda, Maryland this 6th day of April 1983.

For the Nuclear Regulatory Commission.

William J. Dircks,

Executive Director for Operations.

≫ **48 FR 28282**

Published 6/21/83

Comment period expires August 23, 1983. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

10 CFR Parts 50 and 73

[Docket No. PRM–50–36]

Nuclear Utility Backfitting and Reform Group; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of receipt of petition for rulemaking from the Nuclear Utility Backfitting and Reform Group.

SUMMARY: The Commission is publishing for public comment this notice of receipt of a petition for rulemaking dated April 20, 1983, which was filed with the Commission by the Nuclear Utility Backfitting and Reform Group. The petition was docketed by the Commission on April 21, 1983, and has been assigned Docket No. PRM–50–36. The petitioner requests that the Commission amend its regulations in 10 CFR Parts 50 and 73 to modify existing reporting requirements so as to reduce the regulatory burden on affected nuclear power plant licensees and applicants for construction permits. The petitioner also requests that the Commission revise certain guidance documents to provide additional relief from regulatory requirements.

DATE: Comment period expires August 23, 1983. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, DC. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: John Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: 301–492–7086 or Toll Free: 800–368–5642.

SUPPLEMENTARY INFORMATION: The petitioner states that certain of the Commission's reporting requirements contained in 10 CFR Parts 50 and 73, and in related guidance documents, place excessive regulatory burdens on licensees and/or are unnecessarily duplicative. The petitioner further states that the preparation and filing of these reports requires significant time and effort on the part of licensees' employees and that this time could be better spent on matters directly related to public health and safety. Finally, the petitioner states that if the Commission were to modify the subject reporting requirements in the manner requested, licensees' employees would be able to prepare and submit to the Commission on a more reasonable schedule the required technical analyses with less interference in their daily duties.

The petitioner requests that the Commission amend its regulations in 10 CFR Parts 50 and 73 as shown below.

1. *Section 50.54(p)* currently states, in part, that licensees may make changes to the security plan or to the safeguards contingency plan without prior approval by the Commission if the changes do not decrease the safeguards effectiveness of the plan. The licensee must submit a report describing each change within two months after a change is made. The petitioner requests that this requirement be changed to provide that these reports be submitted annually.

In support of this requested amendment, the petitioner states, in part, that since reports of changes filed by licensees in compliance with this requirement are not important from the standpoint of public health and safety, they should be treated similar to other reports now filed by licensees with the Commission under 10 CFR 50.59(b), which permits annual reports.

The petitioner requests that § 50.54(p) be amended as follows:

§ 50.54 Conditions of Licenses.

* * * * *

(p) The licensees shall * * * furnish * * * a report containing a description of each change *annually* * * *

2. *Section 50.54(q)* currently states, in part, that nuclear power reactor licensees may make changes in their emergency plans without prior Commission approval only if the changes do not decrease the effectiveness of the plans, and the plans, as changed, continue to meet the standards of § 50.47(b) and the requirements of Appendix E to 10 CFR Part 50. The licensee must report this type of change within 30 days after it is made. The petitioner requests that these changes be reported annually. In the alternative, the petitioner requests that these changes be reported to the Commission within two months after they are made.

In support of this requested amendment, the petitioner states, in part, that the type of changes which can be made in an emergency plan without prior NRC approval are by definition insubstantial, and that these changes can neither decrease the plan's effectiveness nor cause the plant to be in non-compliance with applicable requirements. Thus, the petitioner states, these changes are not directly related to public health and safety, and licensees should be permitted to file these reports in a manner similar to the reports filed with the Commission under 10 CFR 50.59(b) (as noted above).

The petitioner requests that § 50.54(q) be amended as follows:

§ 50.54 Condition of licenses.

* * * * *

(q) . . . If a change is made without approval, the licensee shall furnish one copy to the Administrator of the appropriate NRC Regional Office specified in Appendix D of Part 20 of this chapter and two copies to the Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 within a *year* after the change is made.

[or, in the alternative:]

(q) . . . If a change is made without approval, the licensee shall furnish one copy to the Administrator of the appropriate NRC Regional Office specified in Appendix D of Part 20 of this chapter and two copies to the Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 *within two months* after the change is made.

3. *Section 50.55(e)* currently states, in part, that holders of construction permits for nuclear power plants must notify the Commission within 24 hours of each deficiency found in design and construction, which, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at ar y time throughout the expected lifetime of the plant. The licensee must then follow up this notification with a written report within 30 days. The petitioner requests that the 24-hour notificat'on requirement be eliminated. In the alternative, the petitioner requests that initial notification of a reportable deficiency be permitted for a period of up to five days following discovery of the deficiency.

In support of this requested amendment, the petitioner states, in part, that the 24-hour notification provision does not allow licensees sufficient time to obtain and analyze available data to the extent necessary to determine if a particular problem is, in fact, a reportable deficiency. The petitioner further states that the 24-hour notification provision is unnecessary because ample notification and explanation of a reportable deficiency are provided by means of the existing 30-day written reporting requirement in § 50.55(e)(3).

The petitioner requests that § 50.55(e) be amended as follows:

§ 50.55 Conditions of construction permits.

* * * * *

(e) * * * [Paragraph (e)(2) is deleted and the world *"also"* is deleted from the first sentence of paragraph (e)(3)]

[or, in the alternative:]

* * * * *

(e)(2) The holder of a construction permit shall notify the appropriate Nuclear Regulatory Commission *Inspection and Enforcement* Regional Office of each reportable deficiency *with five days of its discovery.*

4. *Section 50.59*—Section 50.59(a) states, in part, that power reactor licensees are authorized, without prior Commission approval, to: (1) make changes in the facility as described in the safety analysis report, (2) make changes in procedures as described in the safety analysis report, and (3) conduct tests or experiments not described in the safety analysis report, unless the proposed change, test, or experiment involves a change in the technical specifications incorporated in the license or an unreviewed safety question. Section 50.59(b) requires, in part, that licensees submit a report containing a brief description of the changes, tests, and experiments covered under § 50.59(a) to the appropriate NRC Regional Office either annually or at such shorter intervals as may be specified in the license. The petitioner requests: (1) that reports submitted to the Commission under § 50.59(b) which apply to changes in the facility or in procedures described in the SAR (except for those describing tests and experiments) be submitted under the provisions of § 50.71 and be considered to satisfy the requirements of § 50.59(b) (Section 50.71(e) requires, in part, that licensees periodically update the Final Safety Analysis Report (FSAR)—Revisions to the FSAR must reflect all changes made in the facility or procedures as described in the FSAR; all safety evaluations performed by the licensee either in support of requested license amendments or in support of conclusions that changes did not involve an unreviewed safety question; and all analyses of new safety issues performed by or on behalf of the license at Commission request); (2) that reports required under § 5059(b) be submitted on an annual basis (§ 50.59(b) currently requires that licensees furnish reports of changes, tests, and experiments annually or at such shorter intervals as may be specified in the license); and (3) that § 50.59(b) be amended to specify the same annual deadline for submittal of FSAR revisions as is specified in § 50.71.

In support of these requested amendments, the petitioner states, in part, that to the extent that the reporting requirement of § 50.59(b) applies to changes in the facility or in procedures described in the FSAR, it overlaps with the reporting requirements in § 50.71(e), and filing similar reports under both sections is an unnecessarily burdensome and duplicative procedure. In addition, the petitioner states that the submittal of the actual required information itself in compliance with § 50.71 should be deemed to satisfy the requirement of § 50.59(b) for ". . . a report containing a brief description of such changes." The petitioner further states that submittal of the actual FSAR revisions instead of having to prepare a summary of such changes for submittal would decrease the burden on licensees

with no attendant adverse effect upon the safety operation of a plant.

The petitioner requests that § 50.59(b) be amended as follows:

§ 50.59 Changes, tests and experiments.

• • • • •

(b) The licensee shall maintain records of changes in the facility and of changes in procedures made pursuant to this section, to the extent that such changes constitute changes in the facility as described in the safety analysis report or constitute changes in procedures as described in the safety analysis report. The licensee shall also maintain records of tests and experiments carried out pursuant to paragraph (a) of this section. These records shall include a written safety evaluation which provides the bases for the determination that the change, test or experiment does not involve an unreviewed safety question.

The licensee shall also furnish *reports containing a brief description of such changes, tests and experiments, including a summary of the safety evaluation of each, to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter with a copy to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.*

In order to eliminate the submittal of duplicate reports, to the extent that this reporting requirement applies to changes in the facility or in procedures, it is satisfied by the submittal by the licensee of a copy of the most recent FSAR revisions, prepared pursuant to § 50.71(e), which reflect changes made in the facility or in procedures, including a summary of each safety evaluation prepared. Such FSAR revisions shall be furnished annually, and shall be scheduled for submittal following, or concurrent with, the licensee's submittal of updated information under § 50.71. Reports describing tests and experiments shall be submitted annually or at such shorter intervals as may be specified in the license.

Any report submitted by a licensee pursuant to this paragraph will be made a part of the public record of the licensing proceeding. In addition to a signed original, 39 copies of each report of changes in a facility of the type described in § 50.21(b) or § 50.22 or a testing facility, and 12 copies of each report of changes in any other facility, shall be filed.

The records reflecting changes in the facility shall be maintained until the date of termination of the license, and records reflecting changes in procedures and records of tests and experiments shall be maintained for a period of five years.

5. *Appendix E, 10 CFR Part 50, Section V* (Implementing Procedures) states, in part, that licensees authorized to operate nuclear power facilities must submit to the Commission changes to the emergency plan or procedures within 30 days of making the changes. The petitioner requests that this requirement be changed to provide that the changes be reported annually. The petitioner also requests that the Commission revise Section V in Appendix E to specify that a criterion for reporting (a "threshold of significance") must be satisfied before a report by licensees would be required and that the revised requirement provide that licensees make the threshold determination for reporting in a manner similar to that currently specified in § 50.54(p) (for determining whether changes may be made in a security plan without prior NRC approval). The petitioner states that if this type of standard were used, procedural changes in the emergency plan would not be reportable if the licensee determined that: 1) the procedural changes did not decrease the effectiveness of the plans, and 2) the plans continued to satisfy the standards of § 50.47(b) and Appendix E.

In support of these requested amendments, the petitioner states, in part, that the procedural changes submitted to the Commission by licensees in response to this reporting requirement rarely reflect substantive modifications to the emergency plan and therefore the reporting requirement constitutes a substantial paperwork burden for licensees which is not justified by any tangible safety benefit. The petitioner further states that the time that would be saved by licensees if its proposed revision were adopted could be devoted to ensuring compliance with other requirements which more directly affect public health and safety.

The petitioner requests that Section V of Appendix E to 10 CFR Part 50 be amended as follows:

Appendix E

Emergency Planning and Preparedness for Production and Utilization Facilities

• • • • •

v. Implementing Procedures

No less than 180 days prior to the scheduled issuance of an operating license for a nuclear power reactor or a license to possess nuclear material, one copy of the applicant's detailed implementing procedures for its emergency plan shall be submitted to the Administrator of the appropriate NRC Regional Office, specified in Appendix D of Part 20 of this chapter and two copies are to be sent to the Document Control Desk, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Licensees who are authorized to operate a nuclear power facility shall *annually* submit one copy of any changes to their emergency plan or procedures to the Administrator of the appropriate NRC Regional Office, specified in Appendix D, 10 CFR Part 20, and two copies to the Document Control Desk, *unless the licensee determines that such changes do not decrease the effectiveness of the emergency plan and that the plan continues to satisfy the standards set forth in § 50.47(b) and this Appendix E.*

6. *Section 73.71* of NRC regulations requires that licensees notify the NRC Operations Center within one hour of: (1) The details and results of any trace investigation conducted because a shipment of strategic special nuclear material is lost or unaccounted for (§ 73.71(a)); (2) any incident in which an attempt has been made, or is believed to have been made, to commit a theft or unlawful diversion of special nuclear material, or to commit an act of radiological sabotage against the licensee's plant or its transportation system (§ 73.71(b)); or (3) any event which significantly threatens or lessens the effectiveness of a physical security system (§ 73.71(c)). Section 73.71 further requires that licensees follow up their oral communications to the Commission with written reports on the details of the incidents. These reports must be submitted within 15 days in the case of events reported under § 73.71(a) or (b), and within 5 days in the case of events reported under § 73.71(c). The petitioner requests that the time period for submission of written reports be extended to 30 days.

In support of this requested amendment, the petitioner states that the existing 15-day time period is unnecessarily short, since in some instances the licensee may not have fully resolved the problem within this brief time period. The petitioner further states that licensees would naturally prefer to leave their employees free to resolve the problem, and even assuming that the situation is resolved during the existing 15-day time period, the licensee's staff will likely be unusually busy throughout the 15-day period as it attempts to deal with an unexpected occurrence of this nature in addition to its routine duties.

The petitioner requests that § 73.71 be amended as follows:

§ 73.71 Reports of unaccounted for shipments, suspected thefts, unlawful diversion, radiological sabotage, or events which significantly threaten or lessen the effectiveness of safeguards.

(a) • • • The licensee shall also file within a period of *thirty (30) days* a written report to the appropriate NRC Regional Office setting forth the details and results of the trace investigation. A copy of this written report must be sent to the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

(b) • • • The initial notification must be followed within a period of *thirty (30) days* by a written report, submitted to the appropriate NRC Regional Office shown in

Appendix A of this part setting forth the details of the incident. Copies of the written report are to be sent to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. After the submission of the written report required by this paragraph, a licensee shall immediately inform the appropriate Regional Office by means of a written report of any substantive additional information which becomes available to the licensee concerning the incident.

(c) * * * The licensee shall submit a written report to the appropriate NRC Regional Office, listed in Appendix A of this part, describing the event in detail within *thirty (30) days* of the time of discovery. A copy of this written report must be sent to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. This notification and these reports satisfy both the notification requirements of Part 21 of this chapter, if the event is also reportable under Part 21, and § 50.72(a)(4) of this chapter, if applicable. A separate log must be maintained to record events reportable under § 73.71. Licensees need not report any event which is designated as not reportable in their security or contingency plans.

The petitioner requests additional relief from existing reporting requirements as described below.

7. *Section 50.72(a)* requires nuclear power plant licensees to notify the NRC Operations Center within an hour of the occurrence of specified events. The petitioner states that certain of the events covered, particularly those addressed in § 50.72(a)(2) and § 50.72(a)(5), also trigger similar reporting requirements contained in the technical specifications incorporated in the license. The petitioner requests that, to the extent that the reporting requirements in license technical specifications duplicate the reporting requirements of § 50.72(a), the plant technical specifications should be amended to eliminate duplicate requirements.

In support of this request, the petitioner states that greater assurance of safe operation will not be achieved by the imposition of license technical specification reporting requirements which parallel reporting requirements in NRC regulations.

8. *NUREG–0123.* The petitioner states that, as noted above, nuclear power plant licensees must comply not only with reporting requirements contained in NRC regulations, but also with reporting provisions set forth in technical specifications incorporated in their licenses. These reporting provisions typically appear in section 6.9 of a licensee's technical specifications and are based upon model technical specifications contained in NUREGs–0103, 0123, 0212, and 0452. The petitioner further states that licensees must respond to certain types of reportable occurrences listed in section 6.9.1.8 of NUREG–0123 by: (1) Notifying the NRC within 24 hours; (2) confirming the occurrence by telegraph, mailgram or facsimile transmission on the first working day following the event; and (3) submitting a written followup report within 14 days. The written report is to include, at a minimum, a complete copy of a licensee event report form, which must be supplemented, as needed, by additional narrative material to provide a complete explanation of the circumstances surrounding the event. The petitioner requests that the requirement for filing a written followup report within 14 days be changed to provide that licensees may submit the report in response to this NUREG–0123 provision (and to any similar provision in NUREG–0103, NUREG–0212, and NUREG–0452) within 30 days.

In support of this request, the petitioner states that the schedule for filing a written followup report under the NUREG–0123 provision, like that imposed for similar written reports under 10 CFR 73.71, is unnecessarily short. The petitioner further states that NRC is kept continuously informed of any developments in the situation; thus, requiring preparation of the written followup report during a time when the licensee's staff will be unusually busy dealing with the problem itself, is not justified by any convenience which it may afford the NRC staff.

The petitioner requests that section 6.9.1.8 of NUREG–0123 be revised to read as follows:

6.9.1.8. The types of events listed below shall be reported within 24 hours by telephone and confirmed by telegraph, mailgram or facsimile transmission to the Director of the Regional Office or his designate no later than the first working day following the event, with a written followup report within *30 days*. The written followup report shall include, as a minimum, a completed copy of a licensee event report form. Information provided on the licensee event report form shall be supplemented, as needed, by additional narrative material to provide complete explanation of the circumstances surrounding the event.

The petitioner also requests that similar changes be made to the other NUREGs mentioned above, if necessary.

In support of all the requested amendments and revisions described above, the petitioner states the following:

The reporting requirements discussed in this petition constitute clear examples of what NRC Chairman Palladino has characterized as excessive and ill-coordinated demands on licensee resources. Modification of these (and, perhaps, other) excessive and/or redundant requirements as proposed herein is clearly warranted in order to promote efficient NRC regulations, reduce unnecessary regulatory burdens on power plant licensees and, thus, facilitate more productive use of licensee time. By eliminating non-essential paperwork (or allowing a more reasonable schedule for its completion), these changes would promote public health and safety by allowing licensees more time to devote to substantive safety concerns. Adoption of the amendments we have proposed would also reinforce Chairman Palladino's announced intention to reduce NRC requirements to manageable proportions by setting priorities based on demonstrable safety significance and by identifying requirements which can be deferred or dropped entirely. Moreover, the implementation of these changes is clearly consistent with the Commission's responsibilities under the Paperwork Reduction Act, 44 U.S.C. 3501 (1980).

In the petition (which consists of a 26-page brief), the petitioner provides additional justification and support for the requested amendments not included in this **Federal Register** notice. Members of the public interested in filing comments on PRM–50–36 are urged to obtain a copy of the petition by writing to the address noted above.

Dated at Washington, D.C., this 14th day of June, 1983.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

≫ 48 FR 41429
Published 9/15/83

10 CFR Part 50

[Docket No. PRM–50–10]

State of New Jersey; Withdrawal of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Withdrawal of petition for rulemaking (PRM–50–10) filed by the State of New Jersey.

SUMMARY: The Commission is withdrawing, at the petitioner's request, a petition for rulemaking (PRM–50–10) that was filed by the State of New Jersey. In the petition, which was dated March 27, 1974 (and in a supplement to the petition dated June 10, 1974), the State of New Jersey had requested that the Commission amend its regulations in 10 CFR Parts 30, 40, 50, 55, 70, and 100 to increase the level of assurance that accidents at nuclear facilities can be prevented and, in the event of an accident, to ensure that the consequences are mitigated.

ADDRESSES: A copy of the petitioner's letter of withdrawal is available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. A copy of the petitioner's letter of withdrawal may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

SUPPLEMENTARY INFORMATION: In **Federal Register** notices published on May 6, 1974 (39 FR 15900), and July 11, 1974 (39 FR 25525), the Commission announced the receipt of and requested comments on a petition for rulemaking (PRM–50–10) filed by the State of New Jersey. The petitioner requested that the Commission amend its regulations in Parts 50 and 70 to require that licensees who routinely handle large quantities of byproduct material be made subject to emergency planning requirements and, in addition, to require that these licensees clearly identify the material involved, exposure pathways, and populations at risk as a result of licensed activities. In Part 100, the petitioner requested that the exclusion area criteria be amended, the population zone criteria be reviewed, and that radiation release protective action levels set by EPA or individual states be incorporated by reference. The petitioner also requested that the exclusion of "Class 9 accident" from consideration in reactor licensing procedures be eliminated when new or novel siting or design considerations are involved, and that due consideration be given to counter measures for the "Class 9 accident". Finally, the petitioner asked that reactor operators be required to undergo training and periodic reexamination and that the scope of Part 55 be expanded to cover health physicists assigned to reactor sites and operators of waste disposal facilities.

The petitioner subsequently withdrew the requested change concerning reactor personnel qualification and agreed that the requested change concerning health physicists was satisfied by the Commission's issuance of regulatory guides. Part of the petitioner's request concerning emergency planning for Part 70 licensees was addressed in a final rule published in the **Federal Register** on March 31, 1977 (42 FR 17125).

The petitioner's request concerning emergency planning for Part 50 licensees was incorporated into a final rule published in the **Federal Register** on June 3, 1981 (46 FR 29712).

Those issues raised by the petitioner that are not covered by the NRC actions discussed above are the items withdrawn by the petitioner.

Dated at Bethesda, Maryland this 7th day of September 1983.

For the Nuclear Regulatory Commission.

William J. Dircks,

Executive Director for Operations.

48 FR 50083

Published 10/31/83

Comment period expires 12/30/83

10 CFR Part 50

[Docket No. PRM–50–37]

Lillian McNally; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of receipt of petition for rulemaking from Lillian McNally.

SUMMARY: The Commission is publishing for public comment this notice of receipt of a petition for rulemaking dated July 8, 1983, which was filed with the Commission by Lillian McNally. The petition was docketed by the Commission on July 8, 1983, and has been assigned Docket No. PRM–50–37. The petitioner subsequently filed a supplement to the petition dated September 20, 1983. The petitioner requests that the Commission amend its regulations to require new standards for levels of deuterium and tritium in water circulated in and around nuclear power plants.

DATE: Comment period expires December 30, 1983. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, DC. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: John Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: 301–492–7086 or Toll Free: 800–368–5642.

SUPPLEMENTARY INFORMATION: The Petitioner asks that new standards be set for all water circulated in and around nuclear power plants. The petitioner specifically proposes, in part, that "* * * water circulated in and around Nuclear Power Plants is not to exceed the natural environmental concentration of Deuterium and Tritium for one year; that * * * one year [later] the concentration shall be limited to less than one part by weight in 10,000 parts; and that the [level] * * * of contaminants shall be reviewed annually thereafter to determine the attainable purity of circulating water." The petitioner requests the limit on deuterium to reduce the formation of tritium from deuterium by neutron absorption.

The petitioner further states that if there are specially designed facilities that can properly contain contaminated or heavy water, these facilities could be exempted from the proposed requirement.

Finally, in support of the specific proposal noted above, the petitioner states that the new standards are requested in the interest of public safety since, according to the petitioner, three incidents are on record where radioactive water was released to the atmosphere and a fourth may also have occurred.

Dated at Washington, DC this 25th day of October 1983.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

➤49 FR 28409
Published 7/12/84

10 CFR Part 50

[Docket Nos. PRM-50-32, PRM-50-32A and PRM-50-32B]

Ohio Citizens for Responsible Energy, Marvin I. Lewis, Mapleton Intervenors, Denial of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Denial of petition for rulemaking.

SUMMARY: The Nuclear Regulatory Commission is denying three petitions for rulemaking requesting that the Commission amend its rules of practice to require applicants for construction permits and operating licenses for nuclear power plants to provide for design features to protect against the effects of electromagnetic pulse (EMP). The requested amendments are unnecessary for the protection of public health and safety, are contrary to sound administrative practice, and are inconsistent with the established national policy that the protection of the United States against hostile enemy acts is the responsibility of the nation's defense establishment. Based upon results of studies done by the NRC and for the NRC (Sandia National Laboratory report NUREG/CR-3069 Interaction of Electromagnetic Pulse With Commercial Nuclear Power Plant Systems) there is no reason to believe that an EMP would prevent any commercial nuclear power plant from achieving a safe shutdown condition. In addition, the rationale behind the issuance of 10 CFR 50.13, which was upheld in the U.S. Court of Appeals, was that Congress did not intend to implement legislation that would require nuclear power plants to be capable of warding off the effective of hostile enemy acts. This rationale has been reevaluated in light of the petitions and at this time the Commission finds no information to support a change in policy.

ADDRESS: Copies of correspondence and documents cited below are available for public inspection at the Commission's Public Document Room at 1717 H Street NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Martin J. Virgilio, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C., 20555, 301-492-8454.

SUPPLEMENTARY INFORMATION: Mr. Robert Alexander, on behalf of the Ohio Citizens for Responsible Energy, filed a petition for rulemaking (PRM-50-32) on March 16, 1982. Notification of the petition was placed in the **Federal Register** of June 24, 1982 (47 FR 27371).

The petitioner requested 10 CFR Part 50 be amended to read in the following manner:

1. "Section 50.13—Attacks and destructive acts by enemies of the United States; and defense activities (a) An applicant for a license to construct and operate a production or utilization facility, or for an amendment to such license, is not required, with the exception of (b) below, to provide for design features or other measures for the specific purpose of protection against the effects of (i) attacks and destructive acts, including sabotage, directed against the facility by an enemy of the United States, whether a foreign government or other person, or (ii) use of deployment of weapons incident to U.S. defense activities. (b) Such applicant must, however, provide for design features to protect against the effects of electromagnetic pulse from whatever source."

"Appendix A of Subpart 50—Criterion 4—Environmental and missile design bases. Structures, systems, and components important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents. These structures, systems, and components shall be appropriately protected against dynamic effects of missiles, pipe whipping, and discharging fluids, that may result from equipment failures and from events and conditions outside the nuclear power unit including, but not limited to electromagnetic pulses."

The Petition PRM 50-32A

Mr. Marvin I. Lewis filed a petition for rulemaking (PRM-50-32A) which was received by NRC on August 5, 1982. Notification of the petition was placed in the **Federal Register** of November 24, 1982 (47 FR 53030).

The petitioner requested that the following sentence be added to 10 CFR Part 50, Appendix A, Criterion 13:

"Instrumentation shall be hardened to protect against electromagnetic pulse generated by a high altitude, nuclear explosion."

The Petition PRM-50-32B

Mr. Wendell H. Marshall, on behalf of the Mapleton Intervenors, filed a petition for rulemaking on August 31, 1982. Notification of the petition was placed with that of PRM-50-32A in the **Federal Register**, 47 FR 53030, November 24, 1982.

The petitioner requested that 10 CFR Part 50 be amended as follows:

"Section 50-13. Attacks and destructive acts by enemies of the United States; and defense activities.

(a) An applicant for license to construct and operate a production or utilization facility, or for an amendment to such license, is not required, with the exception of (b) below, to provide for design featues or other measures for the specific purpose of protection against the effects of (I) attacks and destructive acts, including sabotage directed against the facility by an enemy of the United States, whether foreign government or person, or (II), use of deployment of weapons incident to United States defense activities.

(b) Such applicant must, however, provide for design features to protect against the effects of electromagnetic pulse from whatever source.

The petitioner also requested that Appendix A Subpart 50 be amended to read as follows:

Criterion 4—Environmental and missile design bases. Structures, systems, and components important to safety shall be designed to accommodate the effects of and be compatible with the environmental conditions associated with normal operation, maintenance, testing and postulated accidents, including loss-of-coolant accidents. These structures, systems, and components shall be properly protected against dynamic effects of missiles, pipe whipping and discharging fluids that may result from equipment failures and from events and conditions outside the nuclear power unit including but not limited to the electromagnetic pulse.

Bases for Requests

As the basis for the requests, the OCRE petition states that when 10 CFR 50.13 was established, the effects of EMP were not known. All three petitioners state that the present regulations have a serious defect that would permit a flaw in the design of nuclear power plant safety systems, and that this flaw can be corrected "quite simply with little hardship worked upon applicants."

Request for Comments on Petitions

Notification of the filing of the three petitions was published in the **Federal Register** twice, with PRM-50-32A and PRM-50-32B sharing the same notice. This notice also reopened the comment period for PRM-50-32, and assigned January 24, 1983 as the expiration date for the comment period applicable to all three petitions. Comments, in general, were considered for all three petitions

as a whole since the petitions were nearly identical.

Of twenty-eight letters of comments received, including rebuttals by the petitioners, eighteen were opposed to the petition, ten in favor. Responses to those comments are covered in the analysis of the petitions set out below.

Five of the commenters raise the concern that EMP induced voltage/current transients in conducting materials can disrupt, damage or destroy electronic circuits and components, leading to a loss of heat removal from the core and hence meltdown. At present, the NRC staff is unaware of any data to substantiate this point. On the contrary, a study performed for the NRC by Sandia National Laboratories (NUREG/CR–3069 Interaction of Electromagnetic Pulse With Commerical Nuclear Power Plant Systems) concluded that the EMP induced signals at the components required for safe shutdown are considerably less than nominal operating levels.

The Sandia Study was performed on a sample nuclear power plant chosen from the plants currently undergoing an operating license review. Three additional plants of different design were later surveyed to assess whether the results could be applied generally. The study was limited to those systems required for safe shutdown of the nuclear plant. A "worst case" EMP threat situation was postulated. The incident plane wave embodied a bounding field intensity and an orientation relative to the plant systems so as to optimally excite every point of interaction. From the analysis of this "worst case" threat it was concluded that the diffuse fields inside seismic Class 1 or structurally equivalent buildings due to the incident EMP plane wave were negligible sources of energy, with responses of less than one volt, and a duration of approximately ten microseconds. The predicted EMP signals at the critical equipment in the sample plant were found to be substantially less than nominal operating levels. The principal source of EMP energy coupled to critical circuits in the plant was the current induced by the incident wave on external cables which penetrate into the plant buildings. Although response levels at some plants may be higher than those calculated for the sample plant (due to plant topology and cabling practice), the Sandia study found damage thresholds for the components examined high enough to preclude component failure postulating higher response levels. The summary conclusions of the Sandia study were (1) the safe shutdown capacity of the sample plant would not be disabled by an EMP event, and (2) the safe shutdown capability of nuclear power plants in general would survive the postulated EMP event.

The Sandia study used permanent damage failure as the criterion for assessing system vulnerability, that is, signal upset effects were not considered in the study. Therefore, the Sandia study conclusions do not include this consideration. However, the NRC staff conducted its own study on EMP induced signal upsets and concluded that the conclusions of the Sandia study also applied to signal upsets. The results of the Sandia and staff studies were reported to the Commission by a memorandum from W. J. Dircks (SECY–83–367, "Staff Study of Electromagnetic Pulse (EMP) Effects on Nuclear Power Plants and Discussion of Related Petitions for Rulemaking (PRM–50–32, 32A, and 32B)" dated September 6, 1983.

The NRC staff's study on EMP found that a loss of offsite power is the most probable plant upset condition that could result from an EMP event with little or no effect on the in-plant normal and emergency AC and DC power distribution systems. In plants that include design features that enhance coupling with incident EMP, (due to plant topology and cabling practice) any exposed portions of the in-plant normal and emergency AC and DC power distribution systems may experience signal upset effects. However, these effects would be limited to the exposed portions of the system and recovery is expected to be possible in a reasonably short time (10–20 minutes) depending on plant unique design features. The NRC staff's study further concluded that the reactor trip system, engineered safety features actuation system, control systems, and the control room alarm and indication systems are relatively invulnerable to EMP-induced signal upset.

The subject of cost of implementation was commented on by both supporters and opponents of the petitions. The petitions stated that implementation could be accomplished "without great expense". Eight commenters took issue with this, and in one case suggested that a cost-benefit analysis be made. In support of their claim that the cost of implementation was not great, two petitioners and one additional commenter stated that the military is presently "hardening" its equipment against the effects of EMP and that not all power plant equipment need be hardened. In addition, it was argued that solid state equipment could be replaced by vacuum tubes and relays as a means of providing protection.

No Commission regulation requires a petitioner for rulemaking to submit design details or cost information associated with proposed amendments to 10 CFR Part 50. Therefore, no estimate of the cost of implementation of hardening measures was provided in these petitions. However, a switchover from solid state devices to vacuum tubes would not be a minor undertaking. Vacuum tubes and relays have much larger power and size requirements than solid state devices. Not only would entire circuits require redesign; additional power sources and possibly new electrical equipment rooms or layouts would be required. At the minimum, long outage periods to make the modifications would be required. It should be noted that although the NRC staff does not subscribe to the view that hardening costs would be inconsequential, the conclusion that the petitions should be denied does not rest on high cost; it is based, rather, on the absence of necessity, as explained above.

The fact that the military is presently hardening its equipment against the effects of EMP is not considered relevant to this issue because the needs and resources of the military and the equipment and systems involved are not similar to those of nuclear power plants.

Ten commenters stated that revision of the Code of Federal Regulations would be contrary to the philosophy used in establishing 10 CFR 50.13, which assumes that national defense is the responsibility of the defense establishment and the risk of attack is borne by the nation as a whole. The commenters note that this philosophy was supported by the United States Court of Appeals for the District of Columbia in *Siegel* v. *AEC* (400 F. 2d 778 (D.C. Cir. 1968). Similarly, four commenters note that the effects of a nuclear power plant due to a nuclear explosion and its resultant effects would be minor compared to the nuclear detonation itself. In rebuttal, the petitioners point out that the AEC was not aware of EMP when 10 CFR 50.13 was written and that EMP may be caused by sources other than those that are military in origin.

The intent and basis for 10 CFR 50.13 were set forth in NRC's Statement of Consideration (32 FR 13445):

"The protection of the United States against hostile enemy acts is a responsibility of the nation's defense establishment and of the various agencies having internal security functions. The power reactors which the Commission licenses are, of course, equipped with numerous features intended to assure the safety of plant employees and the public. The massive containment and other procedures and systems for rapid shutdown of the facility included in these features could serve a useful purpose in protection against the effects of enemy attacks and destructive acts, although that is not their specific purpose. One factor

underlying the Commission's practice in this connection has been a recognition that reactor design features to protect against the full range of the modern arsenal of weapons are simply not practicable and that the defense and internal security capabilities of this country constitute, of necessity, the basic 'safeguards' as respects possible hostile acts by an enemy of the United States."

Though adjudicated in 1968, the decision of *Siegel* v. *AEC* is no less valid today than it was then. The court at that time agreed that the AEC need not require nuclear power plants to protect themselves from hostile acts against this country by enemies. EMP is an effect of a weapon whose use would be regarded as a hostile act. Other portions of the Commission's regulations address the physical protection and security of nuclear power plants, including 10 CFR 73.55 which specifies the requirements incumbent upon each licensee for protection against acts of sabotage. Non-hostile atmospheric explosions are banned by the Nuclear Test Ban Treaty and are exceedingly unlikely.

A truck-mounted EMP generator used by terrorists is another scenario raised by commenters. Though it may be feasible to mount the necessary equipment on several large trucks, there are complicating factors which make this scenario improbable. The staff believes, based on general knowledge of the full scale test apparatus presently in use by the military, that EMP generators are massive, costly, and technically complex. EMP fields produced are lower level and highly localized compared to those produced by a nuclear detonation. To provide a better distributed radiation pattern would require several antennas, spatially distributed around a plant, each of which would be electrically attached to the generator. The energy in a pulse would then then have to be distributed to all of the antennas, thus lowering the energy density. It would be incredible for a construction project of this nature to be accomplished all around a plant site without being detected.

In addition, no matter how improbable an accidental or non-accidental, commercial or military nuclear generated EMP, the effects are enveloped by the Sandia and staff studies and are unlikely to disable the safe shutdown capability of a nuclear power plant. Although the Sandia study did not explicitly include analysis of the effects of a terrorist generated EMP, it is the staff's judgement that such effects are enveloped by the results of the Sandia and staff studies. This judgement is based on consideration of the conservatism in the Sandia study and the substantial safety margins calculated therein.

Three commenters noted that the most likely effect of EMP would be a safe shutdown. These comments are probably based on a 1977 report by Oak Ridge National Laboratory and the premise that safety systems are designed to fail in the safe direction upon loss of power.

A number of commenters stated that the petition should be denied because not enough was known or that studies were not yet complete. With the publication of the Sandia study on EMP and completion of the NRC staff's evaluation of signal upset, there exists sufficient information upon which to base a decision.

Four commenters noted that the petitioners were using the rulemaking to delay the licensing of Perry or to obstruct nuclear power altogether. However, the petitioner was required by 10 CFR Chapter 1, Subpart H to state their grounds for and interest in the action petitioned for.

The petitioners' request that applicants for construction permits and operating licenses of nuclear power plants provide design features to protect against the effects of EMP goes against the intent of Congress, as embodied in 10 CFR 50.13, and against the decision of the U.S. Court of Appeals. Furthermore, there is no documentary evidence supporting the contention that EMP imperils the safety of nuclear power plants. The evidence on hand indicates that the requested amendments are unnecessary.

Denial

Based on the above considerations and careful consideration of the public comments received on petitions PRM-50-32, PRM-50-32A, and PRM-50-32B the Commission hereby denies the petitions for rulemaking filed by the Ohio Citizens for Responsible Energy, Marvin I. Lewis, and the Mapleton Intervenors. Copies of the petitioners for rulemaking, copies of the letters of comment, SECY paper 83-367, and the Commission's letters of denial are available for public inspection at the Commission's Public Document Room at 1717 H Street NW., Washington, D.C. Copies of NUREG/CR 3069 may be purchased by calling (301) 492-9530 or by writing to the Publication Services Section, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, or puchased from the National Technical Information Service, Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

Dated at Bethesda, MD this 22d day of June 1984.

For the Nuclear Regulation Commission.

William J. Dircks,

Executive Director for Operations.

50 FR 20799
Published 5/20/85

10 CFR Part 50

[Docket No. PRM-50-39]

Southern California Edison Co. Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of receipt of petition for rulemaking from Southern California Edison Company.

SUMMARY: The Nuclear Regulatory Commission is publishing for public comment this notice of receipt of a petition for rulemaking. This petition, filed by Southern California Edison Company, and dated March 29, 1985, was docketed by the Commission on April 3, 1985, and assigned Docket No. PRM-50-39. The petitioner requests the Commission to amend its emergency planning regulations to clarify that onsite and offsite emergency response plans need only include medical arrangements for persons who are both contaminated with radioactive material and physically injured in some other manner which requires emergency medical treatment.

ADDRESSES: All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

Single copies of the petition may be obtained free by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

The petition, copies of comments, and accompanying documents to the petition may be inspected and copied for a fee at the NRC Public Document Room, 1717 H Street NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: John Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: 301-492-7086 or Toll Fee: 800-368-5642.

SUPPLEMENTARY INFORMATION:

Background

I. Petitioner's Interest

The petitioner is one of the owners of the San Onofre Nuclear Generating Station (SONGS), Units 2 and 3, and the licensed operator of Units 2 and 3. The petitioner states that the Court of Appeals decision in *Guard* v. *Nuclear Regulatory Commission*, 753 F.2d 1144, 1150, (D.C. Cir. 1985) has left undecided

the planning standard to be applied pursuant to 10 CFR 50.47(b)(12). Particularly, the class of people for whom advance arrangements for medical services are required is not clearly stated in the present wording of 10 CFR 50.47(b)(12). The petitioner is interested in establishing standards for pre-arranged emergency medical services which are based upon a scientific and medical understanding of what is necessary to protect the public.

II. Statement In Support of Petition

a. Specific Issues Involved

The petitioner believes that this petition raises one fundamental question: Does the public safety require that emergency medical treatment be pre-arranged for severely irradiated persons who have not also suffered physical injury requiring immediate treatment in a medical facility?

b. Petitioner's View

The petitioner contends that public safety does *not* necessitate the pre-arrangement of emergency medical treatment for severely irradiated persons who have not also suffered physical injury requiring immediate treatment in a medical facility. Specifically, the petitioner contends that scientific and medical studies, as well as evidence developed in hearing with respect to the licensing of SONGS 2 & 3, support the following conclusions:

1. Time is not of the essence in treatment of excessive radiation and, therefore, persons suffering from irradiation do not require emergency treatment.

2. Existing hospitals are capable of treating far more than the number of persons who potentially would be so severely irradiated as to require non-emergency hospitalization. The nature of radiation injury is such that transport to facilities anywhere in the United States would not increase the danger to such persons.

3. A grant of this petition would be consistent with the studies upon which 10 CFR 50.47(b)(12) was based.

c. Facts In Support of Petitioner's View

In support of the petition for rulemaking, but not as an integral part of it, Petitioner submitted to the Commission four volumes of documents,[1] a brief summary of which is as follows:

SONGS Record Volume I (pages 1–435): This volume is the Joint Appendix submitted to the United States Court of Appeals for the District of Columbia (Docket No. 84–1091; *GUARD* v. *United States Nuclear Regulatory Commission*, 753 F.2d 1144 (1985)).

SONGS Record Volume II (pages 436–543): This volume consists of selected testimony dealing with the necessity for arrangements for medical services for injured contaminated individuals pursuant to 10 CFR 50.47(b)(12) from the extensive hearing in the SONGS 2 & 3 Operating License Proceeding. (*Southern California Edison Co.)* (San Onofre Nuclear Generating Station, Units 2 & 3), LBP–82–39, NRC 1163 (1982) (NRC Docket Nos. 50–361 OL and 50–362 OL).

SONGS Record Volume III (pages 544–964): This volume consists of certain exhibits entered in the above-cited operating license proceeding.

SONGS Record Volume IV (pages 965–1364): This volume consists of excerpts from present emergency reponse plans of various California agencies and governments which are relevant to SONGS 2 & 3 as well as letters of agreement which are part of the SONGS 2 & 3 Emergency Plan.

The petitioner asserts that the record in *San Onofre* provides ample evidence of the fact that persons experiencing excessive doses of radiation (such as might be received from a nuclear power plant accident) do not need immediate emergency medical attention. The conclusiveness of the evidence is reflected in the Licensing Board's Initial Decision of May 14, 1982 (15 NRC 1163) [vol. I, p. 1] and the Appeal Board's Decision (ALAB–680 of July 16, 1982 (16 NRC 127) [vol. I. p. 131].

The petitioner states that there is a significant medical distinction between the class of persons who are both contaminated and severely injured and those persons who are only irradiated. Petitioner notes that there are more than sufficient numbers of prepared hospitals to handle persons who suffer only from severe irridation, and therefore recognition of this distinction in an amendment of 10 CFR 50.47(b)(2) will in no way compromise the treatment and care of the general public.

III. Proposed Amendment to 10 CFR Part 50

Therefore, the petitioner proposes that § 50.47(b)(12) be revised to read as follows:

§ 50.47 Emergency plans.

* * * * *

(b) * * *

(12) Arrangements are made for emergency medical services for persons who are both (i) contaminated with radioactive material and (ii) physically injured such that immediate treatment in a medical facility is required.

* * * * *

IV. Conclusion

In conclusion, the petitioner contends that in the absence of alternative actions by the Commission, this rulemaking is required to respond to the mandate of the Court of Appeals in *Guard* v. *NRC*. A rulemaking which establishes clearly that 10 CFR 50.47(b)(12) applies only to persons both traumatically injured and contaminated with radioactive material is warranted by the facts that (1) time is not the essence in treatment of excessive radiation and (2) sufficient facilities exist in the form of accredited hospitals to adequately treat persons suffering from severe irradiation. Petitioner asserts that these facts are well established. The petitioner argues that this proposed amendment would properly implement the findings dictated by current scientific and medical evidence and currrent hospital accreditation regulations.

Dated at Washington, DC this 14th day of May 1985.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

[1] Bracketed citations in this petition refer to the cited documents as bound and paginated in the four SONGS Record volumes submitted with the petition. Citation in also made to cited documents as officially printed. Transcript references ("tr.") refer to the transcript from the hearing record developed in *Southern California Edison Co.* (San Onofre Nuclear Generating Station, Units 2 & 3), LBP–82–39, 15 NRC 1163 (1982).

≫50 FR 24655
Published 6/12/85

10 CFR Part 50

[Docket No. PRM–50–39]

Southern California Edison Co.; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of receipt of petition for rulemaking from Southern California Edison Company; correction.

SUMMARY: In the notice of receipt of petition for rulemaking PRM–50–39 filed by Southern California Edison Company and published in the **Federal Register** on May 20, 1985 (50 FR 20799), the 60 day comment expiration date for receiving comments was inadvertently omitted. The comment period expires July 22, 1985.

Dated at Washington, DC this 6th day of June 1985.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

PART 50

DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

STATEMENTS OF CONSIDERATION

21 FR 355
Published 1/19/56
Effective 2/18/56

Effective 30 days after publication in the FEDERAL REGISTER, Part 50, 10 CFR, "Control of Facilities for the Production of Fissionable Material," is hereby amended to read as follows:

25 FR 1072
Published 2/6/60
Effective 3/7/60

The following amendments implement subsection 182b and 189a of the Atomic Energy Act of 1954, as amended, by incorporating in 10 CFR Part 50 a definition of "testing facility" and the statutory requirement of review by the Advisory Committee on Reactor Safeguards and formal hearings on license applications for power and test reactors.

Notice of proposed issuance of these amendments was published in the FEDERAL REGISTER on March 28, 1959 (24 F.R. 2449).

Effective 30 days after publication in the FEDERAL REGISTER, 10 CFR Part 50 is hereby amended as follows:

25 FR 8712
Published 9/9/60
Effective 10/9/60

On February 11, 1960, the Commission issued for public comment proposed amendments to Part 50 of the Commission's rules and regulations. These proposed amendments provided for (1) clarification of work permitted or prohibited with respect to any production or utilization facility prior to the issuance of a construction permit; (2) revision of the criteria for issuance of provisional construction permits; and (3) procedures and criteria for the issuance of provisional operating licenses in order to permit orderly and expeditious transition from a construction permit to an operating license in cases where (a) the evidence will not support a finding of completion of construction in compliance with the terms and conditions of the construction permit, or (b) there are involved features, characteristics, or components of the proposed facility as to which it appears desirable to obtain actual or further operating experience before issuance of an operating license for the full term, up to forty years, requested by the applicant. The comments received by the Commission with respect to these proposed rules have been considered by the Commission and are on file in the Public Document Room. Some modifications have been made on the basis of these comments.

The amendments, published below, relate to items (1) and (3) above.

Pursuant to the Administrative Procedure Act, notice is hereby given that the following amendments are adopted to be effective thirty (30) days after publication thereof in the FEDERAL REGISTER.

26 FR 4989
Published 6/6/61
Effective 6/6/61

Statement of considerations. The Atomic Energy Act of 1954, as amended, defines "production facility" as "(1) any equipment or device, determined by rule of the Commission to be capable of the production of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public * * *" (section 11.t.). Pursuant to this provision, the Commission has by rule defined a "production facility", among other things, as "any facility designed or used for the processing of irradiated materials containing special nuclear material, except laboratory scale facilities designed or used for experimental or analytical purposes only." (Section 50.2(a)(3).)

Under this definition, facilities which are designed or used for the processing of irradiated fuel elements are subject to the licensing requirements of Part 50, including, among others, the issuance of a construction permit prior to construction, issuance of operators' licenses, showing of financial protection and execution of a Price-Anderson indemnification agreement. If material containing special nuclear material has been irradiated, the Part 50 requirements are presently applicable regardless of the length or type of irradiation or content or activity of fission products. On the other hand, facilities used for the processing of unirradiated fuel elements are not subject to Part 50 requirements, but are licensed pursuant to Part 70, Special Nuclear Material, Part 40, Licensing of Source Material, and Part 30, Licensing of Byproduct Material.

The Commission has concluded that irradiated materials which contain such small amounts of fission products and have such low levels of fission product activity that no additional radiological safety precautions are required beyond those necessary in connection with the processing of unirradiated materials should be treated similarly to unirradiated materials from a licensing standpoint. Accordingly, the amendment set forth below is intended to exempt the processing of slightly irradiated uranium from the licensing requirements of Part 50. Such processing would still be subject to the requirements of Part 30, Licensing of Byproduct Material and Part 70, Special Nuclear Material.

The limits on concentration and activity specified in the amendment are based upon analysis and calculations described in "AEC Analysis of Appropriate Limits for Exemption," a document which is on file in the AEC's Public Document Room, 1717 H Street NW., Washington 25, D.C. A copy of this document may be obtained at the AEC's Public Document Room or upon request addressed to the Atomic Energy Commission, Washington 25, D.C., Attention: Director, Division of Licensing and Regulation.

The specified limits for concentrations and quantities of induced radioactivity are very low. It is possible that higher concentrations and quantities would not present hazards appreciably greater than those associated with the processing of unirradiated uranium. The specified limits have been selected so as to exempt from the Part 50 regulations only materials with such low concentrations and activities of fission products, including plutonium, that safety equipment, personnel and procedures adequate for unirradiated uranium are obviously sufficient.

The amendment would have the effect of exempting from Part 50 the processing of many fuel elements used in critical facilities, if cooled for an appropriate period of time prior to processing. For example, the activity of a fuel element irradiated in a critical facility operated at 50 watts for 40 days would decrease below the exempted amount after approximately 180 days' cooling time. On the other hand, fuel elements used in research, test or power reactors for any reasonable period of time would require extremely long cooling times to decrease to exempted levels. For example, assuming a reactor containing 4 kg. of uranium 235, a fuel element irradiated at 10 kilowatts for 30 days would require cooling for approximately 30 years.

The amended regulation will relieve Engelhard Industries, Inc., from Part 50 licensing requirements for proposed processing at their Newark, N.J., plant of 24 slightly irradiated MTR-type fuel and control elements being returned by the Netherlands Government. Since these elements were used in a reactor for only one week and have been in storage for three years, the content of fission products and level of activity fall within the limits prescribed in the amended regulation. The proposed activities are described in Engelhard Industries, Inc., Application for Exemption, dated January 5, 1961, a copy of which is on file in the AEC's Public Document Room.

Inasmuch as this amendment is intended to relieve from, rather than to

impose, restrictions under regulations currently in effect and will not adversely affect the public health and safety, the Commission has found that general notice of proposed rule-making and public procedure thereon are unnecessary and good cause exists why this amendment should be made effective upon publication in the FEDERAL REGISTER.

It may be noted that the amendment set forth below excludes from the definition of "production facility" only facilities used for the processing of slightly irradiated uranium. Public comments are invited with respect to (1) the concentrations of fission products, including plutonium, specified in the amendment with respect to irradiated uranium; (2) possible adoption of exceptions with respect to other irradiated materials containing special nuclear materials; and (3) proposed concentrations of fission products for such additional irradiated materials. Such public comments should be submitted within sixty (60) days of the publication of this amendment in the FEDERAL REGISTER and should be addressed to the Secretary, United States Atomic Energy Commission, Washington 25, D.C.

Notice is hereby given that effective upon the publication in the FEDERAL REGISTER, 10 CFR Part 50, Licensing of Production and Utilization Facilities, is amended by revising § 50.2(a)(3) to read as follows:

26 FR 9546
Published 10/10/61
Effective 10/10/61

On May 9, 1961, the Commission published for public comment proposed amendments to 10 CFR Part 50 which would provide procedures for the transfer of licenses; the enforcement of creditors' rights against licensed facilities; and the surrender and termination of licenses. The amendments would also grant consent to the creation of mortgages or other liens upon licensed facilities. The comments received by the Commission with respect to the proposed amendments have been considered by the Commission and are on file in the Commission's Public Document Room.

Certain clarifying changes have been made in the language of § 50.82 of the amendments as published on May 9, 1961, in the notice of proposed rule making. The changes in language do not significantly modify the purpose or effect of the amendments as originally published.

Pursuant to the Administrative Procedure Act, notice is hereby given that the following amendments to Title 10, Chapter I, Part 50, Code of Federal Regulations, entitled "Licensing of Production and Utilization Facilities," are adopted to be effective upon publication in the FEDERAL REGISTER:

27 FR 12915
Published 12/29/62
Effective 1/28/63

On March 15, 1962 the Commission published in the FEDERAL REGISTER (27 F.R. 2479) a proposed amendment to § 50.35 designed to identify the principal elements of the safety determination which the Commission makes when it issues a provisional construction permit.

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendment within sixty days after publication of the notice in the FEDERAL REGISTER. No comments were received.

Notice is hereby given that pursuant to the Administrative Procedure Act and the Atomic Energy Act of 1954, as amended, the following rule is adopted to be effective thirty days after publication in the FEDERAL REGISTER.

28 FR 3196
Published 4/3/63
Effective 6/2/63

On October 12, 1961, the Atomic Energy Commission published in the FEDERAL REGISTER a notice of proposed rule making to revise Parts 50 and 115 to include therein provisions for the designation of individuals to be responsible for directing the licensed activities of licensed operators and the requirement that individuals so designated be licensed as supervisory operators pursuant to Part 55. Requirements covering the presence or availability of supervisory operators were also included.

The Commission has received many comments from interested persons and organizations. As a consequence, the proposed amendments have been rewritten with incorporation of a number of these suggestions. The principal changes from the proposed amendments are as follows:

1. The proposed term "supervisory operator" has been changed throughout to "senior operator". The main reason for this change is to avoid any implication that the Commission, in granting such a license, is expressing an opinion on whether the holder of the license is part of, or eligible for a management group.

2. A definition of "controls" has been added as paragraph (t) in § 50.2 and as paragraph (m) in § 115.3. This addition is to conform with the definition in Part 55.

3. Section 50.54(j) has been redesignated as § 50.54(n) and a new § 50.54(j) has been added. The corresponding change in Part 115 is redesignation of § 115.42(h) as § 115.42(l) and addition of a new § 115.42(h). This change states that apparatus and mechanisms other than controls, the operation of which may affect the reactivity or power level of the facility shall be manipulated only with the knowledge and consent of a licensed operator of senior operator.

4. Sections 50.54(m) and 115.42(k) have been revised to better describe the conditions during which the presence of a senior operator is required.

Pursuant to the Atomic Energy Act of 1954, as amended, and the Administrative Procedure Act of 1946, the following amendments to 10 CFR Parts 50 and 115 are published as a document subject to codification to be effective 60 days after publication in the FEDERAL REGISTER.

31 FR 4668
Published 3/19/66
Effective 3/19/66

Miscellaneous Amendments

See Part 20 Statements of Consideration.

32 FR 3090
Published 2/21/67
Effective 3/4/67

Elimination of Statement of Reasons for Surrender of License

The Atomic Energy Commission has adopted an amendment of § 50.82(a) of 10 CFR Part 50, "Licensing of Production and Utilization Facilities," which eliminates the requirement of that section that a licensee who proposes to surrender his facility license, dismantle the facility, and dispose of its component parts provide, in his application to the Commission for a surrender, a statement of reasons.

The general language of § 50.82 furnishes sufficient authority to require a "statement of reasons" in the unlikely event that it might be required to protect the common defense and security and the public health and safety. Therefore, the requirement of such a statement from all applicants is unnecessary.

Because this amendment relates to a minor, nonsubstantive matter, notice of proposed rule making and public procedure thereon are unnecessary, and good cause exists to make the amendment effective upon publication in the FEDERAL REGISTER.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and the Administrative Procedure Act of 1946, as amended, the following amendment of 10 CFR Part 50 is published as a document subject to codification to be effective upon the date of its publication in the FEDERAL REGISTER.

32 FR 13445
Published 9/26/67
Effective 10/26/67

Exclusion of Attacks and Destructive Acts by Enemies of the U.S. in Issuance of Facility Licenses

On February 11, 1967, the Atomic Energy Commission published a notice of proposed rule making in the FEDERAL REGISTER (32 F.R. 2821) proposing amendment of 10 CFR Parts 50 and 115 by the addition of new §§ 50.13 and 115.9 to those parts. Comments were invited to be submitted within 30 days after publication. An amendment to that notice of proposed rule making was published on April 5, 1967 (32 F.R. 5562); comments on the amended notice were invited to be submitted within 30 days after publication.

After careful consideration of the comments received on both the first notice of proposed rule making and the amended notice and other factors involved, the Commission has adopted the amendments set forth below, which are the same as those published for comment on April 5, 1967, except for an editorial change in § 115.9. The amendments codify the Commission's practice of not requiring applicants for licenses to construct and operate production and utilization facilities to provide for design features or other measures for the specific purpose of protection against (1) the effects of attacks and destructive acts, including sabotage, directed against the facility by an enemy of the United States, or (2) the use or deployment of weapons incident to U.S. defense activities.

The protection of the United States against hostile enemy acts is a responsibility of the nation's defense establishment and of the various agencies having internal security functions. The power reactors which the Commission licenses are, of course, equipped with numerous features intended to assure the safety of plant employees and the public. The massive containment and other procedures and systems for rapid shutdown of the facility included in these features could serve a useful purpose in protection against the effects of enemy attacks and destructive acts, although that is not their specific purpose. One factor underlying the Commission's practice in this connection has been a recognition that reactor design features to protect against the full range of the modern arsenal of weapons are simply not practicable and that the defense and internal security capabilities of this country constitute, of necessity, the basic "safeguards" as respects possible hostile acts by an enemy of the United States.

The circumstances which compel this recognition are not, of course, unique as regards a nuclear facility; they apply also to other structures which play vital roles within our complex industrial economy. The risk of enemy attack or sabotage against such structures, like the risk of all other hostile attacks which might be directed against this country, is a risk that is shared by the nation as a whole.

Furthermore, assessment of whether, at some time during the life of a facility, another nation actually would use force against that particular facility, the nature of such force and whether that enemy nation would be capable of employing the postulated force against our defense and internal security capabilities are matters which are speculative in the extreme. Moreover, examination into the above matters, apart from their extremely speculative nature, would involve information singularly sensitive from the standpoint of both our national defense and our diplomatic relations.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and the Administrative Procedure Act of 1946, as amended, the following amendments of Title 10, Chapter I, Code of Federal Regulations, Parts 50 and 115, are published as a document subject to codification, to be effective 30 days after publication in the FEDERAL REGISTER.

33 FR 2381
Published 3/1/68
Effective 3/1/68

License and Authorization Required

On August 3, 1967, the Atomic Energy Commission published in the FEDERAL REGISTER (32 F.R. 11278) proposed amendments to its regulations, 10 CFR Part 50, Licensing of Production and Utilization Facilities, and 10 CFR Part 115, Procedures for Review of Certain Nuclear Reactors Exempted from Licensing Requirements, which would specifically permit the driving of piles prior to issuance of a construction permit or construction authorization.

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments within 30 days after publication of the notice or proposed rule making in the FEDERAL REGISTER.

After consideration of the comments received and other factors involved, the Commission has adopted the proposed amendments. The text of the amendments set forth below is identical with the text of the proposed amendments published on August 3, 1967.

Pursuant to the Atomic Energy Act of 1954, as amended, and the Administrative Procedure Act of 1946, as amended, the following amendments to 10 CFR Parts 50 and 115 are published as a document subject to codification, to be effective 30 days after publication in the FEDERAL REGISTER.

33 FR 8587
Published 6/12/68
Effective 7/12/68

Miscellaneous Amendments to Chapter

See Part 2 Statements of Consideration.

33 FR 9704
Published 7/4/68
Effective 9/2/68
Comment Period expires 9/2/68 (Appendix C

Financial Qualifications

On June 13, 1967, the Commission published for comment in the FEDERAL REGISTER (32 F.R. 8423) proposed amendments to its regulations, "Licensing of Production and Utilization Facilities," 10 CFR Part 50, which would provide further guidance as to what information would be required to establish financial qualifications for a facility construction permit and for an operating license. The proposed amendments were accompanied by "A Guide for the Financial Data and Related Information Required To Establish Financial Qualifications for Facility Construction and Operating Licenses," designated proposed Appendix C to Part 50. All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments within 60 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. The Commission withdrew the proposed guide, Appendix C to Part 50, on July 22, 1967 (32 F.R. 10816).

After careful consideration of the comments received and other factors involved, the Commission has adopted the amendments set forth below which, except for Appendix C, are the same as those set out in the notice of proposed rule making.

Section 182a of the Atomic Energy Act of 1954, as amended, provides, among other things, that each application for a license shall state such information as the Commission, by rule or regulation, may determine to be necessary to decide such of the financial qualifications of the applicant as the Commission may deem appropriate for the license. The Act and the Commission's regulations reflect that the fundamental purpose of the financial qualifications provision of that section is the protection of the public health and safety and the common defense and security.

Although the Commission's safety determinations required for the issuance of facility licenses are based upon extensive and detailed technical review, an applicant's financial qualifications can also contribute to his ability to meet his responsibilities on safety matters. The amendment to § 50.33(f) of Part 50 set forth below provides further guidance as to what information is required to establish the financial qualifications of an applicant for a facility construction permit or an operating license. The amendment to § 50.71 provides for the filing of the annual financial reports, including the certified financial statements, of facility licensees with the Commission. The requirements of the amendments for a showing of availability of funds to cover the cost of operating the facility for a

period of at least 5 years and for the filing of annual financial reports, and those pertaining to newly formed entities, apply only to applicants for licenses for production or utilization facilities of types described in § 50.21(b) or § 50.22 of Part 50, and testing facilities as defined in § 50.2(r), Part 50.

A guide intended to aid applicants in satisfying the requirements of § 50.33(f) with respect to the preparation and submission of information sufficient to demonstrate the financial ability of the applicant to carry out the particular activity for which the permit or license is sought is set out in Appendix C, "A Guide for the Financial Data and Related Information Required to Establish Financial Qualifications for Facility Construction Permits and Operating Licenses." Much of the detail appearing in the guide published for comment on June 13, 1967, and later withdrawn, has been eliminated.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to 10 CFR Part 50 are published as a document subject to codification, to be effective 60 days after publication in the FEDERAL REGISTER. The provisions of the amendments will be used as interim guidance pending effectiveness, to the extent that they are not inconsistent with the present regulations in 10 CFR Part 50. The Commission invites all interested persons who desire to submit written comments or suggestions regarding Appendix C of Part 50, "A Guide for the Financial Data and Related Information Required to Establish Financial Qualifications for Facility Construction Permits and Operating Licenses," to send them to the Secretary, U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Chief, Public Proceedings Branch, within 60 days after publication of this notice in the FEDERAL REGISTER. Consideration will be given such submission with the view to possible amendments of Appendix C. Copies of comments received may be examined at the Commission's Public Document Room at 1717 H Street NW., Washington, D.C.

33 FR 10923
Published 8/1/68
Effective 10/1/68

License Fees for Facility Licenses and Materials Licenses

See Part 170 Statements of Consideration.

33 FR 18610
Published 12/17/68
Effective 1/16/69

Technical Specifications for Facility Licenses; Safety Analysis Reports

On August 16, 1966, the Atomic Energy Commission published in the FEDERAL REGISTER (31 F.R. 10891) for public comment proposed amendments to 10 CFR Part 50 which would (1) establish a revised system of technical specifications which focuses attention on items more directly related to public safety, (2) provide for systematic documentation of the technical and operational bases for specifications, and (3) provide guidance as to the content of preliminary safety analysis reports and safety analysis reports required of applicants for permits to construct, and licenses to operate, production or utilization facilities.

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments within 120 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. After careful consideration of the comments received and other factors involved, the Commission has adopted the amendments set forth below which, except at noted, are the same as those set out in the notice of proposed rule making.

Licenses to operate utilization or production facilities include "technical specifications" in accordance with section 182 of the Atomic Energy Act of 1954, as amended (the Act). Technical specifications set forth the specific characteristics of the facility and the conditions for its operation that are required to provide adequate protection for the health and safety of the public. The technical specifications are a part of the license, and cannot be changed without prior Commission approval.[1]

In the revised system, emphasis is placed on two general classes of technical matters: (1) Those related to prevention of accidents, and (2) those related to mitigation of the consequences of accidents. By systematic analysis and evaluation of a particular facility, each applicant is required to identify at the construction permit stage, those items that are directly related to maintaining the integrity of the physical barriers designed to contain radioactivity. Such items are expected to be the subjects of technical specifications in the operating license.

Section 50.34 has been amended to add a new paragraph (a) which explicitly requires the applicant to submit a preliminary safety analysis report at the construction permit stage and defines the information required at that time. The preliminary safety analysis report will emphasize the principal safety features of the facility and their relation to the site.

The requirement for a preliminary safety analysis report is intended to provide early and adequate information which is expected to expedite the processing of construction permit applications by reducing the time consuming exchanges between the applicant and the AEC staff required to fill information gaps. The identification of probable subjects for technical specifications in the preliminary safety analysis report is expected to minimize burdensome design changes at the operating license stage resulting from design deficiencies in relation to technical specification requirements.

With respect to final safety analysis reports, § 50.34 has been further revised to emphasize the need for analysis and evaluation, and to indicate more definitively what information the Commission requires. As amended, § 50.34 requires that the report include information describing the facility, an explanation of the design bases and limits on facility operation, and evaluations to show that safety functions will be accomplished.

Under § 50.36 as revised, with the filing of an application for an operating license, the applicant is required to propose for Commission review and approval, and the license will include, technical specifications derived from the analysis and evaluation presented in the safety analysis report. The technical specifications for nuclear reactors fall into five general categories, which are defined in § 50.36(c): (1) Safety limits and limiting safety system settings, (2) limiting conditions for operation, (3) surveillance requirements, (4) design features, and (5) administrative controls. For each of the specifications other than those covering administrative controls, the applicant is required to provide a summary of the technical bases for the specifications.

The analysis and evaluation of the facility required under § 50.34 must provide (1) the necessary information from which technical specifications will be selected, and (2) the detailed bases for the specifications derived. Since Appendix A to Part 50 no longer serves a useful function, the Appendix and references to it in § 50.36 have been deleted.

Section 50.59 has been revised to (1) clarify the requirement for records of changes made by a licensee, (2) redefine the term "unreviewed safety question" aid (3) make referral of proposed changes to the Advisory Committee on Reactor Safeguards (ACRS) permissive rather than mandatory. Paragraph (c) of § 50.59 presently requires the Commission to refer to the ACRS requests for changes, tests or experiments or for changes in technical specifications for facilities of a type described in § 50.21(b) or § 50.22, or a testing facility, which present significant hazards considerations not described in or implicit in the safety analysis report. Under the amended rule, such referral is not mandatory.

Several changes have been incorporated in the amendments as adopted as a result of comments and further Commission consideration.

[1] Experience has shown that the degree of detail contained in technical specifications prepared in accordance with present § 50.36 and Appendix A, which has been deleted by this rule making action, is not necessary for purposes of public safety.

In § 50.2, the definition of "design bases" has been revised. Changes have been made in § 50.34 to better define the extent of the safety analysis and to emphasize the reasons for early and thorough consideration of technical specifications. New subparagraphs relating to quality control, research and development, and site evaluation factors have been added.

Several changes have been made in § 50.36(d), which has been redesignated § 50.36(c). The categories of technical specifications to be included in an operating license would be applicable only to nuclear reactors.

Safety system settings having significant safety functions have been included in the requirements of § 50.36(c)(1)(ii). The word "limiting" has been substituted for the words "minimum" and "maximum" in describing safety system settings and conditions for operations. Subparagraph (4) has been revised to emphasize that the Commission's interest is in only those design features whose alteration or modification might affect safety.

Section 50.59(b) has been modified to reflect the Commission's primary interest in assuring that changes, tests or experiments have been responsibly reviewed and evaluated. Certain editorial and corrective changes from the proposed amendments have also been made in §§ 50.34, 50.36 and 50.59.

Some consideration is also being given to further amendments to Part 50 to specify the circumstances under which the modification of a facility or facility design may be required by the Commission, or authorized by the Commission at the request of a licensee.

Since the amendments place increased emphasis on analysis and evaluation of a facility, in order to provide a sound basis for each technical specification, the preparation of technical specifications by the applicant requires a carefully prepared safety analysis report. A "Guide for the Organization and Contents of Safety Analysis Reports for Nuclear Reactors" has been prepared. In addition, a "Guide to Content of Technical Specifications for Nuclear Reactors," has been prepared for use with the revised system of technical specifications.[1] These documents are available for inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C., and copies may be obtained by addressing a request to the Director, Division of Reactor Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545. Technical specifications in accordance with the revised system have been prepared for several reactor facilities for which operating licenses have recently been issued, and copies of these are also available for inspection at the Commission's Public Document Room.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to 10 CFR Part 50 are published as a document subject to codification, to be effective 30 days after publication in the FEDERAL REGISTER.

[1] Guides for preparation of safety analysis reports and technical specifications for chemical processing facilities are being developed.

34 FR 6036
Published 4/3/69
Effective 5/3/69

Miscellaneous Amendments to Chapter

See Part 2 Statements of Consideration.

34 FR 6769
Published 4/23/69
Effective 5/23/69

Consideration of Ultimate Power Level for Power Reactors

On February 14, 1967, the Atomic Energy Commission published in the FEDERAL REGISTER (32 F.R. 2851) a proposed amendment to § 50.34 of 10 CFR Part 50, "Licensing of Production and Utilization Facilities", which would require an applicant for a facility construction permit to include, in the preliminary safety analysis report, an analysis and evaluation of the major systems and components of the facility which bear significantly on the acceptability of the site under the site evaluation factors identified in 10 CFR Part 100, assuming that the facility will be operated at the ultimate power level which is contemplated by the applicant. All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments within 60 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. Upon consideration of the comments received and other factors involved, the Commission has adopted the amendment set out below, which is identical with the proposed amendment published February 14, 1967, except for a few minor changes to conform to the amendments of § 50.34 published in the FEDERAL REGISTER on December 17, 1968 (33 F.R. 18610).

In recent years, many applications for construction permits for power reactors have set forth two figures for operating power levels. The lower figure, that guaranteed to the utility by the manufacturer, is the one supported by the specific design data and analysis set forth in the application. The higher figure is the one expected to be achieved ultimately, but for which justification depends upon experience gained and data developed during operations at the lower power level. Some applications contain no supporting data for the higher figure and merely reference it as a projection which would be the subject of an application for license amendment after the initial operation of the facility had demonstrated its capability to operate safely at the higher power. Other applications extrapolate data from the lower design values to form the bases for the design capacity of the engineered safeguards and other components at the higher level. Because of the absence of adequate data to support operation at the higher capacity, the Commission's finding that there is reasonable assurance that the proposed facility can be constructed and operated at the proposed site without endangering public health and safety has necessarily been limited to operation at the lower power level, and that level is specified in the construction permit which is then issued.

The amendment of § 50.34 of Part 50 which follows requires an applicant for a facility construction permit to include, in the preliminary safety analysis report an analysis and evaluation of the major structures, systems and components of the facility which bear significantly on the acceptability of the site under the site evaluation factors identified in 10 CFR Part 100, assuming that the facility will be operated at the ultimate power level which is contemplated by the applicant. The amendment thus permits evaluation of all major systems and components at the construction permit stage, to the extent permitted by available information.

The power level specified in the construction permit would depend upon the adequacy of the information which the applicant is then able to provide.

Under present technology, it is expected that the power level designated initially in a construction permit will normally be the lower figure. The amendment, however, will not prejudice future requests for increases in power level, whether because of changes in technology or for other reasons.

The amendment in no way changes the nature of the Commission review of each facility at the operating license stage. This review assures that, irrespective of the power level specified in the construction permit, no license will be issued authorizing operation at that power level, or any other, until the applicant has demonstrated that the final design of the facility provides reasonable assurance that the health and safety of the public will not be endangered by operation of the facility.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment of Title 10, Chapter I, Code of Federal Regulations, Part 50 is published as a document subject to codifications to be effective 30 days after publication in the FEDERAL REGISTER.

35 FR 5317
Published 3/31/70
Effective 4/30/70

See Part 2 Statements of Consideration.

35 FR 6644
Published 4/25/70
Effective 4/30/70

See Part 2 Statements of Consideration.

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35 FR 10498
Published 6/27/70
Effective 7/27/70

Quality Assurance Criteria for Nuclear Power Plants

On April 17, 1969, the Atomic Energy Commission published in the FEDERAL REGISTER (34 F.R. 6599) for public comment proposed amendments to 10 CFR 50 "Licensing of Production and Utilization Facilities," which would add an appendix B, "Quality Assurance Criteria for Nuclear Power Plants."

All interested persons were invited to submit comments or suggestions in connection with the proposed amendments within 60 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. After careful consideration of the comments received in response to the notice of proposed rule making and other factors involved, the Commission has decided to adopt the amendments in the form set out below. The amendments, as adopted, reflect a number of the comments. The principal changes from the proposed amendments are as follows:

1. Section 50.34(a)(7) now requires that a description and evaluation of the quality assurance program be included in the preliminary safety analysis report. For clarification, the term, "evaluation" has been deleted and a sentence has been added to require that the description of the quality assurance program shall indicate how the applicable requirements of appendix B will be satisfied. For consistency, a similar statement has been added to § 50.34(b)(6)(ii) with regard to the controls to assure safe operation.

2. Section III of appendix B, "Design Control," has been revised to (a) require provisions to assure that appropriate quality standards are included in design documents and that deviations from such standards are controlled; (b) require that measures be established for the selection and review for suitability of application of materials, parts, equipment, and processes; (c) indicate that design control measures may include means of verifying or checking the adequacy of design other than the performance of design reviews, such as the use of alternate or simplified calculational methods, or the performance of a suitable testing program; and (d) require that design changes be subject to design control measures commensurate with those applied to the original design.

3. The last sentence in section IV of appendix B, "Procurement Document Control," has been modified to recognize that all sections of the quality assurance criteria may not be applicable to all contractors or subcontractors.

4. Section V of appendix B, "Instructions, Procedures, and Drawings," has been revised to make clear that the criteria for determining that important operations have been satisfactorily accomplished need not be duplicated on more than one design document.

5. Section VII, "Control of Purchased Material, Equipment, and Services," has been expanded to require that documentary evidence that material and equipment conform to the procurement requirements shall be available at the nuclear power plantsite prior to installation or use of the material and equipment. The word "all" in the first sentence of this section has been deleted so that a scope broader than that to which appendix B applies will not be inferred.

6. In section VIII, "Identification and Control of Material, Parts, and Components," the second sentence has been revised to eliminate any implication that traceability of material is, in all cases, required.

7. Section X, "Inspection," has been revised (a) to eliminate the implication that in-process inspection and mandatory inspection hold points are, in all cases, required and (b) to indicate that the inspection program shall be established and executed by or for the organization performing the inspected activity, and that the inspection shall be performed by individuals other than those who performed the activity being inspected.

8. In section XIV of appendix B, "Inspection, Test, and Operating Status," the requirement for marking nonconforming items has been deleted to eliminate duplication with the requirements of section XV. The section has also been revised to indicate that tagging valves and switches is one way to identify the operating status, but not necessarily the only way.

9. In section XVI, "Corrective Action," to preclude the necessity of corrective action measures for those conditions adverse to quality which are rarely completely eliminated, such as all weld defects prior to initial inspection, the requirement that the cause be determined and corrected to preclude repetition has been changed to apply to significant conditions adverse to quality.

10. In section XVIII, "Audits," to avoid the implication that personnel performing audits should be qualified to specific requirements, the term "appropriately qualified personnel" has been changed to "appropriately trained personnel."

Editorial changes have also been made.

The amendments set forth below establish quality assurance requirements for the design, construction, and operation of those structures, systems, and components of nuclear powerplants that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. The pertinent provisions of these requirements apply to all activities which affect the safety-related functions of such structures, systems, and components.

The quality assurance requirements established by these criteria are intended to assure that:

(a) Applicable regulatory requirements and the design basis, as defined in § 50.2 and as specified in the license application, for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions.

(b) Systems and components fabricated and tested in manufacturers' facilities conform to the specifications, drawings, procedures, and instructions.

(c) Structures, systems, and components constructed and tested at the nuclear powerplant site conform to the specifications, drawings, procedures, and instructions.

(d) Succeeding activities, such as operating, testing, refueling, repairing, maintaining, and modifying nuclear powerplants, are conducted in accordance with quality assurance practices consistent with those employed during design and construction. In addition to the requirement that operating activities be conducted in accordance with these quality assurance practices, there are other requirements which must be suitably developed and observed to assure safe operation; for example, technical specifications, schedules of maintenance and refueling, fuel management programs, and programs for operator training and qualification.

The quality assurance criteria are intended to assist applicants for nuclear powerplant licenses (1) to comply with § 50.34(a)(7) of Part 50, which requires inclusion in the preliminary safety analysis report of a description of the quality assurance program to be applied to the design, fabrication, construction, and testing of the structures, systems, and components of the facility, and (2) in the development of managerial and administrative controls to be used to assure safe operation, as required by § 50.34(b)(6)(ii).

The criteria will also be used for guidance in evaluating the adequacy of the quality assurance programs in use by holders of construction permits and operating licenses.

The development of the criteria has taken into account cooperative Atomic Energy Commission-industry efforts on quality assurance requirements, the experience accumulated in designing, constructing, and operating licensed nuclear powerplants and Commission-owned reactors, and the quality assurance programs required for work under the cognizance of the Department of Defense and the National Aeronautics and Space Administration.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to 10 CFR Part 50 are published as a document subject to codification, to be effective 30 days after publication in the FEDERAL REGISTER.

35 FR 17530
Published 11/14/70
Effective 2/12/71

Siting of Fuel Reprocessing Plants and Related Waste Management Facilities

On June 3, 1969, the Atomic Energy Commission published in the FEDERAL REGISTER (34 F.R. 8712), and invited public comment on, a proposed statement of policy, in the form of an appendix to 10 CFR Part 50, concerning the siting of fuel reprocessing plants and related waste management facilities. The function of reprocessing plants is to recover valuable unused nuclear fuel

from fuel elements removed from reactors when the elements have reached the end of their useful lives. In addition to the unused fuel, the elements contain radioactive fission products generated during reactor operation. They emerge from the chemical reprocessing as liquid or solid wastes which must be safely disposed of.

The proposed statement of policy dealt principally with (1) the question as to whether the safety problems and characteristics associated with operation or with the decommissioned status of a licensed fuel reprocessing plant require, from the standpoint of the public health and safety, that these plants be located on land owned and controlled by the Federal Government; and (2) the question of ultimate disposal of high-level radioactive fission product wastes generated at these plants. The Commission has concluded that public health and safety considerations relating to fuel reprocessing plants do not require that such facilities be located on land owned and controlled by the Federal Government. Such plants, including the facilities for the temporary storage of high-level radioactive wastes, may be located on privately owned property. This conclusion was based on (1) the availability of technology for solidifying the high-level waste in forms suitable for safe transport to and disposal at a Federal repository specially selected and designed for permanent removal of such radioactive wastes from the biosphere, and (2) a recognition that fuel reprocessing plants can be so designed that radiologically significant contaminants may be removed or otherwise satisfactorily disposed of when the plant is retired from operational service.

The proposed appendix to 10 CFR Part 50 would state, among other things, that the high-activity liquid wastes generated in a fuel reprocessing plant must be converted to an AEC-approved solid form and transferred to a Federal waste repository. The liquid waste could be stored at the fuel reprocessing plant as long as 5 years before conversion to solid form. Shipment to a Federal repository would not be required until 10 years after generation of the liquid waste. The proposed appendix would also provide that reprocessing plants must be designed to facilitate decontamination and removal of all significant radioactive wastes in the event a plant is retired from operational status. License applicants would be required to furnish information on financial qualifications to provide for the removal and disposal of radioactive wastes in accordance with the Commission's existing regulations.

Interested persons were invited to submit comments and suggestions for consideration in connection with the proposed statement of policy within 60 days after publication in the FEDERAL REGISTER. The comment period was later extended to September 15, 1969.

Upon consideration of the comments received and other factors involved, the Commission has adopted the statement of policy which follows. The statement is the same as that published for comment on June 3, 1969, except as noted below.

Of primary concern in developing a policy for the siting of fuel reprocessing plants is the need to restrict, in the interest of public health and safety, the quantities and mobility of the high-level radioactive wastes stored onsite at fuel reprocessing plants. During the past 15 years the Commission has been carrying out research and development programs aimed at developing a method for effectively and permanently removing these wastes from man's biological environment. These programs have also been designed to reduce the possibility of the inadvertent release of such wastes to the environment.

The major emphasis in these programs has been directed toward the conversion of liquid wastes into solid forms suitable for interim onsite storage, safe transport and disposal in selected deep geologic formations. These general concepts were initially suggested in 1955 by the Committee on Radioactive Waste Disposal of the National Academy of Science-National Research Council. The concepts have been supported by successor committees of the Academy. In the interim the technical feasibility of both waste solidification and solid waste disposal in deep geologic formations has been demonstrated. On June 17, 1970, the Commission announced the tentative selection of a site near Lyons, Kans., for the location of a demonstration repository. Authorization and appropriations for construction of the repository will be sought in the fiscal year 1972 budget. It is anticipated that this storage facility—constructed in a deep, bedded-salt formation—will be designated as the initial Federal repository for solid radioactive wastes.

As stated in the Commission's June 17th announcement, bedded salt for long-term storage of radioactive wastes is particularly attractive. It is widespread and abundant; it has good structural properties; it is relatively inexpensive to mine; its thermal properties are better than those of most other rock types; and it occurs generally in areas of low seismicity. Most importantly, salt deposits are free of circulating ground waters and completely isolated from underground aquifers by essentially impermeable rock formations. Furthermore, this situation tends to be preserved because any fractures which might develop are readily healed by plastic deformation of the salt.

There is no indication that alternative technologies, suitable for power reactor fuels, will be available in the foreseeable future. However, should alternate technology become available, and should it appear to be equivalent to or an improvement over that specified in the policy adopted by the Commission, it will be evaluated and given appropriate consideration.

The Commission is continuing to evaluate the feasibility of storage of high-level liquid radioactive wastes from its production facilities at Savannah River, S.C., and Hanford, Wash., in underground caverns beneath these sites. The over 80 million gallons of high-level wastes now stored in tanks at these installations constitute over 95 percent by volume of all high-level wastes in this country. However, such wastes differ materially in radioactivity level, heat output and chemical composition from wastes produced by licensed fuel reprocessing plants planned or under construction. For example, the Savannah River and Hanford wastes have been chemically neutralized, contain large volumes of nonfission product materials, and have heat and radioactivity outputs many times lower than the licensed plant wastes. Most of the Savannah River and Hanford wastes were generated as the result of operations to meet defense needs.

There are a number of unique considerations and incentives for the Commission's decision to support research and development on long-term storage in underground caverns beneath these Savannah River and Hanford sites. These include: The large volume of the Savannah River and Hanford wastes; the relatively low heat output of these wastes as compared with those from licensed reprocessing plants; and the tremendous estimated cost and related problems of solidifying and shipping these wastes offsite. This research and development program is being performed in phases. In the interim both Savannah River and Hanford are immobilizing their tank-stored liquid wastes by evaporating them to salt cakes in the existing tanks. Before any decision is made to store wastes in underground caverns a substantial amount of exploration work will be necessary to assure that the wastes will be isolated from the biosphere for centuries. The research and development program at Savannah River to date, and further exploratory drilling and mining to determine the suitability of the bedrock under the site, are expected to cost about $14 million. Such a research and development program is a necessary prerequisite to a decision to construct a facility solely for Savannah River wastes. Nevertheless, because of the large volume of wastes already in existence at that site, long-term storage of the waste in caverns mined in the bedrock offers the potential of significant cost savings as compared to the alternative of solidification and storage offsite. However, it is doubtful that bedrock storage of liquid wastes would be attractive for licensed reprocessing plants. Specifically, the high cost of the research and development program that would be required to prove out the bedrock at each location, the uncertainty and associated delay until the site is accepted, and the high estimated costs of constructing each such disposal facility, support this conclusion.

At this time there is only one licensed fuel reprocessing plant in operation; consequently the industry does not have a significant volume of existing stored liquid wastes. Planners of new reprocessing plants have available to them proven AEC-developed processes designed to generate relatively small volumes of acid wastes and to reduce these wastes to acceptable solid forms. Recent AEC studies (e.g., ORNL–4451, "Siting of Fuel Reprocessing Plants and Waste Management Facilities") indicate the esti-

mated cost of solidification and shipment of wastes from licensed reprocessing plants to Federal repositories for storage will not have a significant impact on the nuclear power industry.

The Commission does not now regard storage of liquid high-level wastes in tanks as constituting an acceptable method of long-term storage. Commission experience with its tank storage of liquid high-level wastes is extensive and while tank design, construction and maintenance have improved, the fact remains that tanks can deteriorate and leak and that wastes in liquid form offer a much more serious potential for dispersal to the environment in the event of an accident no matter how unlikely such an accident may be, and present far more difficulty for recovery and decontamination than solidified wastes. Tank storage requires extensive surveillance, and often requires mechanical cooling apparatus to be functioning continuously. Over periods of centuries one cannot assure the continuity of surveillance and care which tank storage requires.

Some period of in-tank storage of liquid wastes at the reprocessing plantsite may be required for cooling purposes depending upon the solidification process to be used. However, the requirement to solidify such wastes, within 5 years of their generation, into a form suitable for off-site shipment and long-term storage will assure that liquid wastes do not accumulate on-site in large quantities.

The Commission has given careful consideration to the safety considerations associated with the transport of solid radioactive wastes to a Federal repository. The technology and experience resulting from the transportation of irradiated fuel elements over the last 20 years provide a firm basis for developing safe, reliable systems for shipping solidified high-level radioactive wastes. Shipments of solidified radioactive wastes carried out in accordance with regulations of the AEC and the Department of Transportation should not endanger the health and safety of the public.

As noted, the policy includes a 5-year limit on interim liquid storage of high-level wastes. The policy would also require that the waste be transferred, in solid form, to a Federal repository no later than 10 years following separation of the fission products from the irradiated fuel. These inventory restrictions would be imposed in the interest of minimizing any potential hazard to the public health and safety and of assuring that shipments of a Federal repository are made on a timely basis. The Commission believes that these inventory limitations are reasonable from the standpoint of waste management economics. While a penalty may be incurred in terms of Federal repository space utilization if wastes are placed in a repository at an age under 6 to 8 years, there appears to be little economic incentive to defer placement in the repository of wastes aged more than 10 years. This conclusion takes into account the cost and maintenance of interim solid-storage facilities.

Some concern has been expressed that required solidification of high-level wastes will render unavailable a potentially valuable resource in that these wastes represent a unique source of radionuclides which are useful in various applications, such as compact heat and power sources. However, under the Commission policy, the permissible 5-year inventory of liquid wastes will provide a ready supply of feed material for an isotope recovery facility, and the separated byproducts will not be subject to the inventory limitations. Furthermore, the quantity of isotopes generated in the production of nuclear power will continue to expand rapidly in the foreseeable future; thus, the isotope production in any given year will represent a significant fraction of the total quantity then available.

Interest has been expressed regarding that aspect of the policy which provides that disposal of high-level radioactive fission product waste would not be permitted on any land other than that owned and controlled by the Federal Government. It has been urged that the Commission permit the establishment of repositories for such wastes on State-owned land with operation under AEC licenses. The Commission has considered these suggestions but believes at this time that high-level waste repositories should be under Federal ownership and responsibility. The Commission wishes to emphasize, however, that adoption of this policy will not preclude consideration of State participation in federally owned repositories or in high-level waste management activities at some time in the future.

The health and safety of the public, both of the present and future generations, requires that any permanent repository for high-level radioactive wastes provide complete isolation of the wastes from man's biological environment. The Commission believes that Federal ownership of and responsibility for the proposed Lyons, Kans., repository will provide the most productive and timely means of demonstrating that such repositories can be operated without endangering the health and safety of the public.

Paragraph 2 of the proposed policy published for comment on June 3, 1969: *Provided*, That "High-level liquid radioactive wastes in excess of this authorized inventory must be converted to an AEC-approved solid form." Paragraph 2 has been revised to specify the forms of solidified high-level radioactive wastes considered by the Commission to be acceptable for receipt and disposal at a Federal repository. The specifications have been developed with the view of providing maximum flexibility to licensees in producing solid forms which would satisfy the safety requirements associated with onsite interim storage, transportation, and Federal repository operations.

Data are presently available which will permit independent development of unit costs for all waste management operations involved in complying with the policy other than repository charges.

Following congressional authorization and the completion of the detailed repository design a firm schedule of repository charges will be developed and published by the Commission. For interim guidance the previously cited ORNL report identifies the bases upon which such charges may be developed and provides preliminary estimates. For example, the cost for disposal of a container of waste may be determined as the product of the cost per unit of floor area of the mine and the area that is required to provide for sufficient dissipation of heat from the container. In addition, there would likely be a minimum charge for handling. Of course, all such charges would be subject to adjustment as experience is gained in the operation of the repository.

One of the elements of the policy is that fuel reprocessing plants be designed to facilitate decontamination and removal of all significant radioactive wastes at the time the facility is permanently decommissioned. Viewed from the perspective that each generation is trustee of the environment for succeeding generations, the Commission considers that the public interest requires that a high degree of decontamination capability be included in such facilities and that any residual radioactive contamination after decommissioning be sufficiently low as not to represent a hazard to the public health and safety. Specific requirements for decontamination and decommissioning of fuel reprocessing facilities will be developed in consultation with competent groups. Public comment will be invited before such rules are made effective.

The proposed policy statement, as previously published, also included provisions, designated as paragraphs 6 and 7 of the policy, which related to the disposal of radioactive hulls and other solid wastes resulting from operation of fuel reprocessing plants. Since publication of the proposed policy the Commission has undertaken studies in connection with the ultimate disposal of wastes contaminated with plutonium or other transuranium nuclides. The Commission anticipates that these studies may result in amendments to its regulations identifying certain radioactive materials deemed unsuitable for disposal at licensed, privately operated land burial facilities. Public comment will be invited on such proposed amendments. Any Commission rules on eventual disposal of such wastes will be rules of general applicability to all licensees. Accordingly, paragraphs 6 and 7 have been deleted.

The Commission staff plans to convene a conference of interested industry representatives prior to the expiration of the 60-day comment period for the purpose of assuring a full discussion and exchange of views regarding the policy statement. The date and place of the conference will be announced at an early date.

The text of the statement of policy set out below is the same as that published for comment on June 3, 1969, except for minor editorial changes and (1) the redesignation of the appendix as Appendix F of 10 CFR Part 50; (2) the revision of the definition of "high-level liquid radioactive wastes" in paragraph 1 of the appendix to clarify its

application to fuel reprocessing systems other than solvent extraction; (3) the revision of paragraph 2 of the appendix to include a specification of AEC-approved solid form; (4) the inclusion of a statement in paragraph 4 of the appendix to indicate that the decontamination to be required upon decommissioning will be the subject of criteria which the Commission will develop in consultation with competent groups; (5) the deletion of the previously proposed paragraphs 6 and 7 of the appendix, dealing with ultimate disposal of miscellaneous solid wastes generated at fuel reprocessing facilities, in view of current AEC studies which the Commission anticipates may result in proposed amendments to its regulations identifying certain radioactive materials deemed unsuitable for disposal onsite or at licensed, privately owned land burial facilities; and (6) the inclusion in the appendix of a new paragraph 6 providing that with respect to fuel reprocessing plants already licensed, the licenses will be appropriately conditioned to carry out the purposes of the policy stated above.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to 10 CFR Part 50 is published as a document subject to codification, to be effective 90 days after publication in the FEDERAL REGISTER. The Commission invites all interested persons who desire to submit written comments or suggestions in connection with the amendment to send them to the Secretary, U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Chief, Public Proceedings Branch, within 60 days after publication of this notice in the FEDERAL REGISTER. Consideration will be given such submissions with the view to possible amendments. Copies of comments received may be examined at the Commission's Public Document Room at 1717 H Street NW., Washington, D.C.

35 FR 18385
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Control of Releases of Radioactivity to the Environment

Statement of considerations. On April 1, 1970, the Atomic Energy Commission published in the FEDERAL REGISTER (35 F.R. 5414) proposed amendments to 10 CFR Parts 20 and 50 of its regulations which would: (a) Improve the framework in Part 20 for assuring that reasonable efforts are made by all Commission licensees to continue to keep exposures to radiation, and releases of radioactivity in effluents as low as practicable, and (b) specify in Part 50 design and operating requirements to minimize quantities of radioactivity released in gaseous and liquid effluents from light-water-cooled nuclear power reactors. Interested persons were invited to submit written comments and suggestions for consideration within 60 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. After consideration of the comments and other factors involved, the Commission has adopted the proposed amendments with certain modifications discussed below.

The scope of the amendments to Part 50 has been expanded to include all nuclear power reactors rather than light-water-cooled power reactors only. The Commission is giving further consideration to appropriate amendments to its regulations to specify design and operating requirements to minimize radiation exposures from radioactivity released in effluents from other types of production and utilization facilities such as fuel reprocessing plants.

Several comments noted that at the time the application for a permit to construct a nuclear power reactor is submitted design has not progressed to the point where specific equipment to be installed for control of gaseous and liquid effluents can be described in detail. Accordingly, proposed § 50.34a (a) and (b) have been modified to require only a description of the preliminary design of equipment to be installed.

Some comments suggested that "curie quantities of radionuclides" required to be estimated in the application for a construction permit in proposed § 50.34a (b)(2) could be construed to mean either the total quantity of each potential radionuclide or the total number of curies of all radionuclides combined. This provision has been modified to require that an estimate of the quantity of each of the principal radionuclides expected to be released annually to unrestricted areas be included in each application for a permit to construct a nuclear power reactor. Section 50.34a(c) has been changed to require a description of the equipment and procedures for the control of effluents and for the maintenance and use of equipment installed in radioactive waste treatment systems, and revised estimates of the releases and exposures which would be expected if significantly different from those given in the application for a construction permit.

Section 50.36a(a)(2) has been revised to allow 60 days, rather than the proposed 30 days, after January 1 and July 1 of each year for filing reports by power reactor licensees on releases of radioactive materials in effluents. The provision of the proposed subparagraph that, if quantities of radioactive materials released during the reporting period are unusual for normal reactor operations, including expected operational occurrences, the report shall cover this specifically, has been modified to substitute the words "significantly above design objectives" for "unusual for normal reactor operations". A number of comments suggested that this subparagraph be more specific with respect to the information that will be required by the Commission to enable it to estimate exposures to the public resulting from effluent releases. The Commission has developed and will publish in the near future specific details as to the information that must be included in the 6-month reports, required by the technical specifications in power reactor licenses, including the format for reporting the information. This information, including estimates of exposures to the public resulting from releases of radioactive materials in effluents from nuclear powerplants, will be published by the Commission on a systematic basis so that it will be readily available to all interested persons.

A substantial number of comments were received regarding the interpretation of various terms used in the proposed amendments such as "every reasonable effort" and "as low as practicable" and suggesting that the Commission develop more definitive criteria for keeping releases of radioactivity in nuclear power reactor effluents as low as practicable. Definition of factors that will be taken into account in determining that radioactivity in effluents is "as low as practicable" has been added to the amendments. The Commission recognizes the desirability of developing more definitive guidance in connection with these amendments, and is initiating discussions with the nuclear power industry and other competent groups to achieve this goal.

Basis for AEC standards. Releases of radioactive materials in effluents by Commission licensees are regulated under the provisions of 10 CFR 20.106 which apply to all uses of byproduct, source, and special nuclear material licensed by the Commission. These provisions are based on radiation protection guides recommended by the Federal Radiation Council (FRC) and approved by the President. The Commission maintains close consultation, and will continue to consult, with the National Council on Radiation Protection and Measurements, and the International Commission on Radiological Protection.

Since 1959 official guidance for control of exposures to radiation has been provided to Federal agencies through recommendations of the FRC, approved by the President. The FRC was established in 1959 by Executive order and by an amendment to the Atomic Energy Act of 1954 (42 U.S.C. 2021(h)). The FRC is directed to advise the President "• • • with respect to radiation matters, directly or indirectly affecting health, including guidance for all Federal agencies in the formulation of radiation standards and in the establishment and execution of programs of cooperation with States." The basic recommendations of the FRC are generally consistent with those of the National Council on Radiation Protection and Measurements (NCRP) and the International Commission on Radiological Protection (ICRP). The FRC recommendations include a radiation protection guide for the genetic exposure of the entire population at a level not quite twice the average natural background radiation level and for a whole body exposure of individuals in the population at a level about five times the average natural background radiation. The guides are set well below the level at which detectable biological effects from exposure to radiation are expected to occur. The FRC states in Report No. 1 dated May 13, 1960, that the guides give appropriate consideration to the requirements of

health protection and the beneficial uses of radiation and atomic energy.

Guidance on low radiation doses. The FRC added to the numerical guidance on maximum limits the further guidance that "every effort should be made to encourage the maintenance of radiation doses as far below this guide as practicable". Similar statements are also included in NCRP and ICRP recommendations.

The Commission has always subscribed to the general principle that, within radiation protection guides, radiation exposures to the public should be kept as low as practicable. This general principle has been a central one in the field of radiation protection for many years. Current reviews of reactor licensing applications include reviews of provisions to limit and control radioactive effluents from the plants.

Experience has shown that licensees have generally kept exposures to radiation and releases of radioactivity in effluents to levels well below the Part 20 limits. Specifically, experience with licensed nuclear power reactors to date shows that radioactivity in water and air effluents has been kept at low levels—for the most part small percentages of the limits specified in 10 CFR Part 20. Resultant exposures to the public living in the immediate vicinity of operating power reactors have usually been small percentages of FRC guides. The Commission believes that, in general, the releases of radioactivity in effluents from the nuclear power reactors now in operation have been within ranges that may be considered "as low as practicable." The Commission also believes that, as a result of advances in reactor technology, further reduction of those releases can be achieved. The results to date are attributable, in part, to steps to assure the integrity of the nuclear fuel, to the design of waste treatment systems to control and contain radioactivity, and to procedures and methods to limit releases of radioactive material to unrestricted areas in effluent water and air. The AEC's total regulatory program includes not only the standards and limits in 10 CFR Part 20, but other regulations as well, various restrictions on plant design and restrictions on operation included in individual operating licenses.

Control of exposures from several different sources. The Commission expects that releases of radioactive material in effluents from nuclear power reactors under the present system of regulation will continue to be low. At the same time, the Commission recognizes that there will be a marked increase in the number and size of nuclear power reactors in operation in the future, and that other activities that contribute radiation exposure to the public can be expected to increase.

Design objectives for nuclear power reactors. The amendments to Part 50 set out below are intended to give appropriate regulatory effect, with respect to radioactivity in effluents from nuclear power reactors, to the guidance of the FRC that radiation doses should be kept as far below the radiation protection guides as practicable. As in the past, an application for a permit to construct a nuclear power reactor will be required to include a description of the preliminary design of equipment to be installed to maintain control over radioactive materials in effluents during normal reactor operations, including expected operational occurrences. In addition, in the case of an application filed on or after the effective date of the amendments, the application will be required to identify the design objectives, and the means to be employed, for keeping levels of radioactive material released in effluents as low as practicable. As in current practice the Commission will review the proposed design of the reactor, including the waste treatment equipment and the description of procedures for the maintenance and use of the equipment, to determine whether the required design objectives are met.

Each license authorizing operation of a nuclear power reactor will include technical specifications which require adherence to operating procedures for control of effluents and the maintenance and use of equipment installed in the waste treatment system, and the submission of semiannual reports containing information on quantities of radioactive material released. If quantities released during the reporting period are significantly above design objectives, the licensee will be required to cover this specifically in its report. The effluent release data submitted by licensees will be compiled by the Commission and made available to the public. The Commission will review in its inspection and enforcement program the effectiveness of the maintenance and operating procedures used by licensees in meeting the objective of minimizing, to the extent practicable, the quantities of radioactivity released in air and water effluents.

On the basis of existing technology and past operating experience the Commission expects that nuclear power reactor waste treatment systems designed and operated in accordance with the requirements set forth in the following amendments to Part 50 will help to assure that releases from nuclear power reactors will generally not exceed small percentages of the annual maximum limits specified in Part 20 and in license conditions, and that radiation exposures to the public resulting from the normal operations of nuclear power reactors will not exceed small percentages of exposures from natural background radiation.

Need for flexibility of operation. It is necessary that nuclear power reactors designed for generation of electricity have a very high degree of reliability. Operating flexibility is necessary to take into account some variation in the small quantities of radioactivity, as a result of expected operational occurrences, which may temporarily result in levels of radioactive effluents in excess of the low levels normally released, but still within the limits specified in § 20.106 of Part 20 and the operating license.

Monitoring. The Commission will continue to evaluate exposures to the public from releases of radioactivity in effluents from nuclear power reactors. Reactor licensees are presently required to carry out monitoring programs designed not only to determine levels of radioactivity in effluents released from the plant but also to detect significant increases in levels of radioactivity in the environment. The licensee is required to report these data to the Commission on a periodic basis. In addition, the Commission, the U.S. Public Health Service and several States carry out environmental surveillance programs. These programs are designed to detect and evaluate increases in environmental levels that may be significant to human exposure. The Atomic Energy Commission in cooperation with other participating agencies as appropriate will systematically publish these data so that they will be available to all interested persons.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 20 and 50, are published as a document subject to codification, to be effective thirty (30) days after publication in the FEDERAL REGISTER. The Commission invites all interested persons who desire to submit written comments or suggestions in connection with the amendments to send them to the Secretary of the Commission, U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Chief, Public Proceedings Branch, within 60 days after publication of this notice in the FEDERAL REGISTER. Consideration will be given such submission with the view to possible further amendments. Copies of comments received may be examined at the Commission's Public Document Room at 1717 H Street NW., Washington, DC.

35 FR 19567
Published 12/24/70
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Plans for Coping With Emergencies

On May 21, 1970, the Atomic Energy Commission published in the FEDERAL REGISTER (35 F.R. 7818) for public comment proposed amendments to 10 CFR Part 50 "Licensing of Production and Utilization Facilities" which would amend § 50.34 "Contents of applications: technical information," and add a new Appendix E, "Emergency Plans for Production and Utilization Facilities." The proposed amendments would require the submission of certain information pertaining to licensee's emergency plans to the Commission in applications for facility operating licenses and of more general information in applications for facility construction permits.

All interested persons were invited to submit comments or suggestions in connection with the proposed amendments within 60 days after publication of the notice of proposed rule making in the FEDERAL REGISTER.

After careful consideration of all of the comments received the Commission has decided to adopt the amendments in the form set out below. The amendments have been revised to reflect some of the comments received. The substantive changes from the amendments published for comment are:

1. Appendix E, section II–B as published for comment would require a description in the preliminary safety analysis report of contracts and arrangements made or to be made with local, State and Federal governmental agencies with responsibility for coping with emergencies. Comments from agencies with this responsibility indicated that identification of the principal agencies should also be made in the preliminary safety analysis report. A statement has been added to section II–B to require identification of these principal agencies. A similar change has been made to section IV–D.

Sections II and IV of Appendix E have been revised to clarify that the licensee, at the time of an accident requiring offsite response, is responsible for notifying those persons or agencies who have legal authority and responsibility for such a response.

Editorial changes have also been made.

The "Guide To the Preparation of Emergency Plans for Production and Utilization Facilities" as referenced in 10 CFR Part 50, Appendix E was developed by the AEC to assist applicants in developing suitable emergency plans and is available for inspection at the Commission's Public Document Room, 1717 H Street NW. Copies may be obtained by addressing a request to the Director, Division of Reactor Licensing or Director, Division of Materials Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to 10 CFR Part 50 are published as a document subject to codification, to be effective 30 days after publication in the FEDERAL REGISTER.

35 FR 19655
Published 12/29/70
Effective 12/29/70

Miscellaneous Amendments

See Part 2 Statements of Consideration.

36 FR 3255
Published 2/20/71
Effective 5/21/71

General Design Criteria for Nuclear Power Plants

The Atomic Energy Commission has adopted an amendment to its regulations, 10 CFR Part 50, "Licensing of Production and Utilization Facilities," which adds an Appendix A, "General Design Criteria for Nuclear Power Plants."

Section 50.34(a) of Part 50 requires that each application for a construction permit include the preliminary design of the facility. The following information is specified for inclusion as part of the preliminary design of the facility:

(i) The principal design criteria for the facility

(ii) The design bases and the relation of the design bases to the principal design criteria

(iii) Information relative to materials of construction, general arrangement, and the approximate dimensions, sufficient to provide reasonable assurance that the final design will conform to the design bases with adequate margin for safety.

The "General Design Criteria for Nuclear Power Plants" added as Appendix A to Part 50 establish the minimum requirements for the principal design criteria for water-cooled nuclear power plants similar in design and location to plants for which construction permits have been issued by the Commission. They also provide guidance in establishing the principal design criteria for other types of nuclear power plants. Principal design criteria established by an applicant and accepted by the Commission will be incorporated by reference in the construction permit. In considering the issuance of an operating license under Part 50, the Commission will require assurance that these criteria have been satisfied in the detailed design and construction of the facility and that any changes in such criteria are justified.

A proposed Appendix A, "General Design Criteria for Nuclear Power Plant Construction Permits" to 10 CFR Part 50 was published in the FEDERAL REGISTER (32 F.R. 10213) on July 11, 1967. The comments and suggestions received in response to the notice of proposed rule making and subsequent developments in the technology and in the licensing process have been considered in developing the revised criteria which follow.

The revised criteria establish minimum requirements for water-cooled nuclear power plants similar in design and location to plants for which construction permits have been issued by the Commission, whereas the previously proposed criteria would have provided guidance for applicants for construction permits for all types of nuclear power plants. The revised criteria have been reduced to 55 in number, include definitions of important terms, and have been rearranged to increase their usefulness in the licensing process. Additional criteria describing specific requirements on matters covered in more general terms in the previously proposed criteria have been added to the criteria. The Categories A and B used to characterize the amount of information needed in Safety Analysis Reports concerning each criterion have been deleted since additional guidance on the amount and detail of information required to be submitted by applicants for facility licenses at the construction permit stage is now included in § 50.34 of Part 50. The term "engineered safety features" has been eliminated from the revised criteria and the requirements for "engineered safety features" incorporated in the criteria for individual systems.

Further revisions of these General Design Criteria are to be expected. In the course of the development of the revised criteria, important safety considerations were identified, but specific requirements related to some of these considerations have not as yet been sufficiently developed and uniformly applied in the licensing process to warrant their inclusion in the criteria at this time. Their omission does not relieve any applicant from considering these matters in the design of a specific facility and satisfying the necessary safety requirements. These matters include:

(i) Consideration of the need to design against single failures of passive components in fluid systems important to safety.

(ii) Consideration of redundancy and diversity requirements for fluid systems important to safety. A "system" could consist of a number of subsystems each of which is separately capable of performing the specified system safety function. The minimum acceptable redundancy and diversity of subsystems and components within a subsystem and the required interconnection and independence of the subsystems have not yet been developed or defined.

(iii) Consideration of the type, size, and orientation of possible breaks in the components of the reactor coolant pressure boundary in determining design requirements to suitably protect against postulated loss of coolant accidents.

(iv) Consideration of the possibility of systematic, nonrandom, concurrent failures of redundant elements in the design of the protection systems and reactivity control systems.

In addition, the Commission is giving consideration to the need for development of criteria relating to protection against industrial sabotage and protection against common mode failures in systems, other than the protection and reactivity control systems, that are important to safety and have extremely high reliability requirements.

It is expected that these criteria will be augmented or changed when specific requirements related to these and other considerations are suitably identified and developed.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to 10 CFR Part 50 is published as a document subject to codification to be effective 90 days after publication in the FEDERAL REGISTER. The Commission invites all interested persons who desire to submit written comments or suggestions in connection with the amendment to send them to the Secretary, U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Chief, Public Proceedings Branch, within 45 days after publication of this notice in the FEDERAL REGISTER. Such submissions will be given consideration with the view to possible further amendments. Copies of comments may be examined in the Commission's Public Document Room at 1717 H Street NW., Washington, DC.

36 FR 4861
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Availability of Guides

The Atomic Energy Commission has adopted an amendment of 10 CFR Part 50 which adds to § 50.34(b)(6)(iii) the information that the Commission has developed documents entitled "Guide for the Planning of Preoperational Testing Programs" and "Guide for the Planning of Initial Startup Programs" to help applicants for facility operating licenses establish adequate plans for such programs. That subdivision requires an applicant for a license to operate a production or utilization facility to include in the Final Safety Analysis Report, the plans for preoperational testing and initial operations.

Because this amendment relates to a minor, nonsubstantive matter, the Commission has found that good cause exists for omitting notice of proposed rule making and public procedure thereon as unnecessary, and for making the amendment effective upon publication in the FEDERAL REGISTER.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment of 10 CFR Part 50 is published as a document subject to codification to be effective upon publication in the FEDERAL REGISTER (3-13-71).

36 FR 5411
Published 3/23/71
Effective 3/23/71

Siting of Fuel Reprocessing Plants and Related Waste Management Facilities

On November 14, 1970, the Atomic Energy Commission published in the FEDERAL REGISTER (35 F.R. 17530), to be effective 90 days after publication, a statement of policy, in the form of a new Appendix F to 10 CFR Part 50, concerning the siting of reactor fuel reprocessing plants and related waste management facilities. The statement of policy dealt, among other things, with the question of ultimate disposal of high-level liquid radioactive fission product wastes generated in the operation of licensed fuel reprocessing plants. The policy requires that such wastes be solidified by the fuel reprocessor and transferred to a Federal repository for disposal and perpetual surveillance.

Paragraph 6 of the statement of policy provided that "With respect to fuel reprocessing plants already licensed, the licenses will be appropriately conditioned to carry out the purposes of the policy stated above." The only fuel reprocessing plant presently licensed by the Commission for operation is located at West Valley, N.Y., about 30 miles south of Buffalo, on land owned by the State of New York. The plant has been operated since 1966 by Nuclear Fuel Services, Inc. (NFS). The high-level liquid radioactive wastes generated at the NFS plant are stored underground in steel tanks which are covered by about 8 feet of soil.

In a letter to the Commission dated January 7, 1971, NFS requested that the Commission consider—in addition to solidification and offsite shipment—three alternative methods for long-term storage or disposal. These alternatives are: (1) Continued storage of the wastes in liquid form with possible transfer of the property from New York State to the United States after closing of the plant; (2) solidification of the wastes in existing tanks with appropriate conditions concerning time of solidification, permanent marking after solidification, and such other measures as may be necessary to protect the public health and safety; and (3) conversion of the wastes to AEC-approved solid form and burial thereof, with appropriate safeguards, in the silty till at West Valley, or in the underlying shales.

The Commission agrees that the matter of ultimate disposal of existing high-level liquid wastes at the West Valley facility presents complex technical problems which may require considerable time for study and resolution. Pending ultimate disposal, the present storage method will continue to provide reasonable assurance that the health and safety of the public will be protected.

In view of the foregoing considerations, the Commission has amended paragraph 6 of the statement of policy (1) to indicate that its application to existing wastes will be the subject of a further rule making proceeding, and (2) to provide more specificity regarding its application to future high-level wastes generated at the NFS facility.

Inasmuch as the amendment is clarifying in nature the Commission has found that good cause exists for omitting notice of proposed rule making and public procedure thereon as unnecessary and for making the amendment effective without the customary 30-day notice.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to 10 CFR Part 50 is published as a document subject to codification, to be effective upon publication in the FEDERAL REGISTER (3-23-71).

36 FR 11423
Published 6/12/71
Effective 7/12/71

PART 50—LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

PART 115—PROCEDURES FOR REVIEW OF CERTAIN NUCLEAR REACTORS EXEMPTED FROM LICENSING REQUIREMENTS

Codes and Standards for Nuclear Power Plants

On November 25, 1969, the Atomic Energy Commission published in the FEDERAL REGISTER (34 F.R. 18822) proposed amendments of its regulations in 10 CFR Part 50, "Licensing of Production and Utilization Facilities," and 10 CFR Part 115, "Procedures for Review of Certain Nuclear Reactors Exempted from Licensing Requirements," which would establish minimum quality standards for the design, fabrication, erection, construction, testing, and inspection of certain systems and components of boiling and pressurized water-cooled nuclear power reactor plants by requiring conformance with appropriate editions of published industry codes and standards.

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments within 60 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. Upon consideration of the comments received and other factors involved, the Commission has adopted the amendments set out below. These amendments have been changed substantially to reflect consideration of the comments received and to minimize interference with the established equipment procurement practices of the nuclear power industry. Some of the more significant changes from the proposed rule are:

a. The rule as rewritten requires that the determination of which code revisions are applicable be based on component order date rather than construction permit date. To prevent abuse of this provision and to minimize the use of outdated codes, the revised rule requires compliance with more recent codes than those in effect on the order date if the components are ordered more than a specified number of months before issuance of the construction permit.

b. The rule has been changed to make its provisions apply to future code revisions on the date they become effective unless the Commission has published a notice in the FEDERAL REGISTER that compliance with such requirements or any part thereof is unacceptable or unnecessary.

c. The definition of reactor coolant pressure boundary has been revised.

d. The date for compliance with the more recent industry codes has been changed from April 1, 1970, to January 1, 1971.

The Commission believes these changes adopted will eliminate most of the concerns expressed, will help to simplify and stabilize the facility licensing process, and will provide an equivalent increase in protection of the health and safety of the public to that which would be provided in the proposed rule.

Criterion 1 of the "General Design Criteria for Nuclear Power Plants" (Appendix A of Part 50) requires that structures, systems, and components of nuclear powerplants which are important to safety be designed, fabricated, erected, and tested to quality standards that reflect the importance of the safety functions to be performed. It has been generally recognized that, for boiling and pressurized water-cooled reactors, pressure vessels, piping, pumps, and valves which are part of the reactor coolant pressure boundary should, as a minimum, be designed, fabricated, inspected, and tested in accordance with the requirements of the applicable American Society of Mechanical Engineers (ASME) codes in effect at the time the equipment is purchased, and that protection systems (electrical and mechanical sensors and associated circuitry) should, as a minimum, be designed to meet the criteria developed by the Institute of Electrical and Electronics Engineers (IEEE).

Because of the safety significance of uniform early compliance by the nuclear industry with the requirements of these ASME and IEEE codes and published code revisions, the Commission has adopted the following amendments to Parts 50 and 115, which require that certain components and systems of water-cooled reactors important to safety comply with these codes and appropriate revisions to the codes at the earliest feasible time. However, use of the ASME Code N-symbol is not required and inspection and survey systems other than those specified by ASME may be used if they provide an acceptable level of quality and safety. AEC quality assurance requirements are set forth in Appendix B to Part 50. The inspection and survey systems required by the amendments which follow may be used in partial fulfillment of these requirements to the extent that they are shown by the description of the quality assurance program required by § 50.34(a)(7) to satisfy the applicable requirements of Appendix B.

In cases where compliance with specified code requirements, or portions thereof, would result in hardships or unusual difficulties without a compensating increase in the level of safety, the Commission may grant exemptions under § 50.55a(b)(1). Section 50.55a(b)(2) provides a basis for the authorization of alternatives to the requirements of the specified codes and standards if it can be shown that an acceptable level of safety and quality will be provided.

The Commission considers that a significant improvement in the level of quality in design, fabrication, and testing of systems and components important to safety of water-cooled reactors will be afforded by compliance with the requirements of more recent versions of the codes than those specified in the amendments, or portions thereof, and encourages such compliance whenever practicable, regardless of the date of purchase of equipment or the provisions of these amendments.

Compliance with the provisions of the amendments and the referenced codes is intended to insure a basic, sound quality level. It may be that the special safety significance of a particular system or component will call for supplementary measures. If analysis of the system shows that such is the case, appropriate supplementary measures are expected to be adopted by applicants and licensees, or will be required by the Commission.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 50 and 115 are published as a document subject to codification to be effective 30 days after publication in the FEDERAL REGISTER.

36 FR 16894
Published 8/26/71
Effective 9/25/71

Civil Penalties

See Part 2 Statements of Consideration.

36 FR 18301
Published 9/11/71
Effective 10/11/71

Quality Assurance Criteria for Fuel Reprocessing Plants

On April 10, 1971, the Commission published in the FEDERAL REGISTER (36 F.R. 6903) proposed amendments to its regulation, 10 CFR Part 50, "Licensing of Production and Utilization Facilities," which would require applicants for a license to construct or operate a fuel reprocessing plant to comply with the quality assurance requirements of appendix B to Part 50, "Quality Assurance Criteria for Nuclear Power Plants."

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments within sixty (60) days after publication of the notice in the FEDERAL REGISTER. After careful consideration of the material received in response to the notice of proposed rule making and other factors involved, the Commission has adopted the proposed amendments. The text of the amendments set out below is identical with the text of the proposed amendments published April 10, 1971.

Fuel reprocessing plants include structures, systems, and components that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. The purpose of the amendments is to provide explicit quality assurance requirements for the design, construction, and operation of those structures, systems, and components by making appendix B applicable to fuel reprocessing plants. The requirements of appendix B will apply to all activities during the design, construction, and operating phases of the fuel reprocessing plants which affect the safety-related functions of such structures, systems, and components.

The quality assurance requirements established by these criteria are intended to assure that:

(a) Applicable regulatory requirements and the design bases, as defined in § 50.2 and as specified in the license application, for structures, systems, and components are correctly translated into specifications, drawings, procedures, and instructions.

(b) Systems and components fabricated and tested in manufacturers' facilities conform to these specifications, drawings, procedures, and instructions.

(c) Structures, systems, and components constructed and tested at the facility conform to these specifications, drawings, procedures, and instructions.

(d) Succeeding activities, such as operating, testing, repairing, maintaining, and modifying, are conducted in accordance with quality assurance practices consistent with those employed during design and construction.

These criteria will also be used for guidance in evaluating the adequacy of the quality assurance programs in use by existing holders of construction permits and operating licenses for fuel reprocessing plants.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50, are published as a document subject to codification effective thirty (30) days after publication in the FEDERAL REGISTER.

36 FR 21579
Published 11/11/71
Effective 11/11/71

Implementation of the National Environmental Policy Act of 1969

On September 9, 1971, the Atomic Energy Commission published in the FEDERAL REGISTER (36 F.R. 18071) a revision of Appendix D of its regulation in 10 CFR Part 50, effective on publication. Revised Appendix D as published is an interim statement of Commission policy and procedure for the implementation of the National Environmental Policy Act of 1969 (NEPA) in accordance with the decision of the U.S. Court of Appeals for the District of Columbia Circuit in "Calvert Cliffs' Coordinating Committee, Inc., et al. v. United States Atomic Energy Commission, et al.," Nos. 24,839 and 24,871. The procedures in Appendix D apply to licensing proceedings for nuclear power reactors; testing facilities; fuel reprocessing plants; and other production and utilization facilities whose construction or operation may be determined by the Commission to have a significant impact on the environment. The procedures also apply to proceedings involving certain specified activities subject to materials licensing.

The Commission adopted certain minor amendments to revised Appendix D, published in the FEDERAL REGISTER on September 30, 1971.

The Commission has adopted additional amendments to revised Appendix D that clarify the intent of the Commission with respect to proceedings subject to section D.

In section 4, Procedures Applicable to Pending Hearings or Proceedings to be Noticed in the Near Future, paragraph 1 has been amended to make the provisions of paragraphs 1 and 2 of that section applicable to proceedings in which hearings are pending as of September 9, 1971, or in which a draft or final detailed statement of environmental considerations prepared by the Director of Regulation or his designee has been circulated prior to said date, in the case of an application for a construction permit, or in which a notice of opportunity for hearing on the application has been issued prior to October 31, 1971, in the case of an application for an operating license. A conforming amendment has been made to section C.1 of Appendix D.

Paragraph 3 of section D of Appendix D has been amended to make clear that, in cases where a notice of opportunity for hearing on an operating license application was issued prior to October 31, 1971, and no hearing has been requested, the environmental review procedures set out in section A of Appendix D, will, with respect to such proceedings, be subject to the limitation that comments will be requested, and must be received, within 30 days from Federal agencies, State and local officials and interested persons on environmental reports and draft detailed statements. This change conforms paragraph 3 of section D to paragraph 1 of section D in this respect.

Because these amendments relate solely to correction and clarification, the Commission has found that good cause exists for omitting notice of proposed rule making and public procedure thereon as unnecessary. The Commission has also found that since the amendments correct and clarify previous amendments which have already become effective, good cause exists for making the amendments effective without the customary 30 day notice.

Accordingly, pursuant to the National Environmental Policy Act of 1969, the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50, are published as a document subject to codification to be effective upon publication in the FEDERAL REGISTER (11-11-71)

37 FR 5745
Published 3/21/72
Effective 3/21/72

PROHIBITION OF SITE PREPARATION AND RELATED ACTIVITIES

On December 1, 1971, the Atomic Energy Commission published in the FEDERAL REGISTER (36 F.R. 22848) proposed amendments to its regulations in 10 CFR Parts 30, 40, 50, and 70, which would redefine the "commencement of construction," as that term is applied to production or utilization facilities subject to Appendix D of Part 50, and would provide for Commission environmental review prior to "commencement of construction" (as that term would be defined under these amendments) of plants and facilities in which activities will be conducted which are subject to the materials licensing requirements of Parts 30, 40, and 70 and to Appendix D of Part 50.

Interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments within 60 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. After consideration of the comments received and other factors involved, the Commission has adopted the proposed amendments with certain modifications, in the form set forth below.

Significant differences from the amendments published for comment are:

(1) With respect to specified facilities subject to materials licensing, additional amendments to Parts 30, 40, and 70 have been adopted to provide for Commission authorization by specific exemption, upon consideration and balancing of certain specified environment factors, for the continuation of site preparation and construction activities begun prior to the effective date of these amendments, and for the conduct of such activities to be undertaken after that date. Activities authorized under the exemption provisions would have to be conducted in such a manner as to minimize their environmental impact.

(2) Section 70.21 has been amended to conform the time for filing an application for a license to possess and use special nuclear material in a plutonium processing and fuel fabrication plant before commencement of construction of the plant to that required of other materials license applications under these amendments (9 months).

The amendments to Part 50 redefine the "commencement of construction" as that term is applied to production or utilization facilities subject to Appendix D of Part 50 (i.e., nuclear power reactors, testing facilities, fuel reprocessing plants, and such other production or utilization facilities determined by the Commission to have a significant impact on the environment). "Commencement of construction" is defined to include any clearing of land, excavation or other substantial action that would adversely affect the natural environment of a site and construction of nonnuclear facilities (such as turbogenerators and turbine buildings), but would not include (1) changes desirable for the temporary use of the land for public recreational uses, necessary borings to determine foundation conditions, or other preconstruction monitoring to establish background information related to the suitability of the site or to the protection of environmental values; or (2) procurement or manufacture of components of the facility. Among the activities that continue to be permitted prior to the issuance of a construction permit are geologic, seismic, hydrologic, and meteorologic investigations and such clearing and building of roads and physical structures as are reasonably necessary, and in general conformity with the standard practices of the industry, for the purpose of determining site suitability and for preconstruction environmental monitoring. It is expected that such activities will be conducted in a manner which will keep their environmental impact to a minimum. For example, appropriate erosion control measures should be employed; roads should be located to minimize or reduce environmental impact; and the natural vegetation should be disturbed only to the extent reasonably necessary to enable safe and proper conduct of the foregoing activities. These same general principles also apply with respect to activities deemed desirable for the purpose of making the land temporarily available for public recreational purposes.

In view of the fact that persons may have already begun activities that were permitted pursuant to § 50.10(b) prior to the adoption of these amendments, but which are now prohibited by these amendments, provision has been made whereby the Commission may authorize continuation of those activities upon consideration and balancing of certain specified environmental factors. During the review period and following, if continuation is authorized, such activities are to be conducted so as to minimize or reduce their environmental impact. In making this relief generally available only to those persons who have commenced actual site preparation activities prior to the effective date of these amendments, the Commission realizes that in individual cases, particularly those instances where plants are in an advanced stage of development, but where no site preparation work has yet been started, undue hardship may be incurred. In those situations, relief may be sought by requesting a specific exemption under § 50.12. Although it is expected that specific exemptions will be used only sparingly for this purpose, appropriate relief may be granted in particular cases where the facts so warrant and a favorable determination can be made with respect to the specified environmental considerations listed in the new § 50.12(b).

Section 50.12 has also been amended to require persons presently authorized, under specific exemptions, to conduct certain activities prior to the issuance of a construction permit for a facility subject to Appendix D to Part 50 to show cause why, with reference to specified environmental considerations, the exemptions should not be revoked. As noted earlier, in the event that any exemption under § 50.12 is issued after the effective date of these amendments, it will be only after appropriate conclusions with respect to the specified environmental considerations listed in the new § 50.12(b) have been reached. In addition, any activities conducted under any exemption are to be carried out in such a way as to minimize or reduce their environmental impact.

Amendments to Parts 30, 40, and 70 of the Commission's regulations in Title 10 of the Code of Federal Regulations provide for Commission environmental review prior to commencement of construction of plants and facilities in which activities subject to materials licensing requirements and to Appendix D of Part 50 will be conducted. "Commencement of construction" is defined in the same manner as for facility license cases.

A provision similar in some respects to that contained in the new § 50.10(d) has been added to Parts 30, 40, and 70, so that Commission authorization may be obtained for continuation of activities already begun, but which are now, in effect, precluded by these amendments until the environmental review is complete. Appropriate clarification has been included in footnotes to §§ 30.11(a), 40.14(a), and 70.14(a) to indicate that those persons who have not effected commencement of construction with respect to proposed facilities as of the effective date of these amendments may also seek this exemptive form of relief. It is expected, however, that specific exemptions will be used only sparingly in such cases. Any site preparation or construction activities authorized to be carried out under the amendments to Parts 30, 40, and 70 must be conducted in such a manner as to minimize or reduce their environmental impact.

Applications for the following types of materials licenses are presently subject to the foregoing requirements: (a) Licenses for possession and use of special nuclear materials for processing and fuel fabrication, scrap recovery and conversion of uranium hexafluoride; (b) licenses for possession and use of source material for uranium milling and production of uranium hexafluoride; and (c) licenses authorizing commercial radioactive waste disposal by land burial.

In order to assure that an opportunity is provided for full consideration of environmental effects before site preparation is begun, these amendments require that applications for such materials licenses be filed at least nine months prior to commencement of construction of plants or facilities in which the licensed activities will be conducted. The amendments also add, as a condition of issuance of such licenses, that before construction of such plants and facilities may be commenced, the Director of Regulation must reach a favorable conclusion with respect to environmental considerations after completion of the environmental review required by Appendix D to 10 CFR Part 50.

As stated in the notice of proposed rule making published in the FEDERAL REGISTER on December 1, 1971, the Commission considers these amendments to be consistent with the direction of the Congress, as expressed in section 102 of the National Environmental Policy Act

of 1969, that, to the fullest extent possible, the policies, regulations and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in that Act. Since site preparation constitutes a key point, from the standpoint of environmental impact, in connection with the licensing of nuclear facilities and materials, these amendments will facilitate consideration and balancing of a broader range of realistic alternatives and provide a more significant mechanism for protecting the environment during the earlier stages of a project for which a facility or materials license is being sought.

The Commission has found that because of the provisions in §§ 30.11(b), 40.14(b), 50.10(d), and 70.14(b), advance notice of the amendments would be contrary to the public interest in that such notice might tend to defeat their purpose; therefore, good cause exists for making the amendments effective without the customary 30-day notice. Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 30, 40, 50, and 70 are published as a document subject to codification to be effective upon publication in the FEDERAL REGISTER (3-21-72).

37 FR 6459
Published 3/30/72
Effective 4/29/72

Reporting of Deficiencies in Design and Construction of Nuclear Powerplants

On July 27, 1970, the Atomic Energy Commission published in the FEDERAL REGISTER (35 F.R. 12076) for public comment proposed amendments to 10 CFR Parts 50 and 115, "Licensing of Production and Utilization Facilities" and "Procedures for Review of Certain Nuclear Reactors Exempted from Licensing Requirements," which would establish uniform requirements for reporting deficiencies occurring during nuclear powerplant design and construction.

All interested persons were invited to submit comments or suggestions in connection with the proposed amendments within 60 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. After careful consideration of the comments received in response to the notice of proposed rule making and other factors involved, the Commission has adopted the amendments in the form set out below. The amendments, as adopted, reflect a number of the comments received on the notice of proposed rule making.

In summary, the comments on the proposed rule were: (1) The extensive use of many adjectives and phrases, such as "significant," "not indicative of," "minor," "magnitude," "extensive," "frequently occurring," etc., leads to ambiguity and vagueness; (2) the provision requiring that no remedial action shall be taken until the Commission has been notified of the deficiency is not necessary, is burdensome, and represents a possible unnecessary loss of time and money to the permit holder or his contractors; and (3) the rule itself is unnecessary, since existing quality assurance programs require maintenance of records of the deficiencies and these are available to the Commission.

With respect to the last comments, the Commission believes that the rule is necessary, so that the AEC staff will have prompt notification of the deficiency and timely information on which to base an evaluation of the potential safety consequences of the deficiency and determine if further regulatory action is required. Some changes have been made which are intended to resolve some of the problems indicated regarding clarity and ambiguity. Other significant changes from the proposed rule are:

a. Examples of deficiencies have been eliminated, since these made the reporting requirements appear more complex than was actually intended.

b. The rule has been modified to permit construction to continue subject to the risk of subsequent disapproval by the Commission.

Among other requirements in the Commission's "Quality Assurance Criteria for Nuclear Power Plants," Appendix B to 10 CFR Part 50, Criterion XVI "Corrective Action" requires that significant conditions adverse to quality be reported to appropriate levels of licensee management. The following amendment to § 50.55 of 10 CFR Part 50 requires the holder of a construction permit for a nuclear powerplant to report the more important of these deficiencies to the Commission.

It is not the intent of the Commission to require reporting of trivial matters. Notification is required, however, of significant deficiencies in design and construction. The holder of a permit for construction of a nuclear powerplant is required to notify the Commission of each deficiency found in the processes of design, manufacture, fabrication, installation, construction, testing, and inspection which, were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear powerplant at any time throughout the expected lifetime of the plant, and which represents either (1) a significant breakdown in any portion of the quality assurance program, (2) a significant deficiency in final designs approved and released for construction, (3) a significant deficiency in the construction of or significant damage to a structure, system, or component requiring corrective action involving extensive effort, or (4) a significant deviation from performance specifications requiring corrective action involving extensive effort.

A similar amendment to § 115.43 of 10 CFR Part 115, "Procedures for Review of Certain Nuclear Reactors Exempted from Licensing Requirements," has also been adopted.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to 10 CFR Parts 50 and 115 are published as a document subject to codification to be effective 30 days after publication in the FEDERAL REGISTER.

37 FR 15127
Published 7/28/72
Effective 8/27/72

Restructuring of Facility License Application Review and Hearing Processes

See Part 2 Statements of Consideration.

37 FR 17021
Published 8/24/72
Effective 8/24/72

Codes and Standards for Nuclear Powerplants

On June 12, 1971, the Atomic Energy Commission published in the FEDERAL REGISTER (36 F.R. 11423) amendments to 10 CFR Parts 50 and 115 which added new §§ 50.55a and 115.43a to establish minimum quality standards for the design, fabrication, erection, construction, testing, and inspection of certain systems and components of boiling and pressurized water-cooled nuclear powerplants by requiring conformance with appropriate editions of specified published industry codes and standards. Sections 50.55a and 115.43a as adopted permitted conformance with the requirements of editions of the specified Codes, Code Cases, and Addenda which become effective after the date of component order, unless the Commission has published a notice in the FEDERAL REGISTER that compliance with such requirements is unacceptable for such components.

The Commission has adopted amendments to §§ 50.55a and 115.43a which, in referencing the editions of Codes, Code Cases, and Addenda whose requirements must be met, include only the editions of Codes, Code Cases, and Addenda through 1971 or the winter 1971 addenda, as appropriate. These amendments are considered necessary for compliance with sections 552 and 553 of title 5 of the United States Code and the regulations of the Office of the Federal Register pertaining to incorporation by reference (1 CFR Part 20).

As new or amended editions of applicable Codes, Code Cases, or Addenda are issued, the Commission will review them and amend the provisions of §§ 50.55a and 115.43a as appropriate.

Since the amendments to §§ 50.55a and 115.43a are necessary to comply with sections 552 and 553 of title 5 of the United States Code and 1 CFR Part 20, the Commission has found that good cause exists for omitting notice of proposed rule making and public procedure

thereon as unnecessary and impracticable and for making the amendments effective upon publication in the FEDERAL REGISTER without the customary 30-day notice.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter 1, Code of Federal Regulations, Parts 50 and 115 are published as a document subject to codification to be effective upon publication in the FEDERAL REGISTER (8-24-72).

38 FR 3955
Published 2/9/73
Effective 3/11/73

Information Requested by Attorney General for Antitrust Review of Facility License Applications

Pursuant to section 105c(4) of the Atomic Energy Act of 1954, as amended, the Attorney General has requested that applicants for certain facility licenses under the Act submit specified information for the purpose of the prelicensing antitrust advice by the Attorney General pursuant to section 105c(1) of the Act.

On April 20, 1972, the Atomic Energy Commission published in the FEDERAL REGISTER proposed amendments to 10 CFR Part 50, Licensing of Production and Utilization Facilities, which would describe and provide appropriate references to the information requested by the Attorney General (37 FR 7810). Interested persons were invited to submit written comments or suggestions for consideration in connection with the proposed amendments within 30 days after publication of the notice of proposed rule making in the FEDERAL REGISTER.

The comments received were furnished to the Department of Justice for its views thereon since the infomation called for in the FEDERAL REGISTER was pursuant to the request of the Attorney General. By letter dated June 16, 1972, the Department of Justice advised the Commission that, after consideration of the comments, the Department still deems that information it had requested is appropriate for the prelicensing antitrust advice furnished by the Department pursuant to section 105c(1) of the Act. Accordingly, the Department of Justice requested the Atomic Energy Commission to obtain the information in the manner and form set out in the FEDERAL REGISTER.

By letter dated May 18, 1972, the Assistant Attorney General, antitrust, requested that item 12 of "II. Required information" of the proposed "Appendix L—Information requested by the Attorney General for antitrust review of facility license applications" be modified to include the following sentence, "Also state separately the most recently estimated cost of the subject unit(s)." The additional sentence does not constitute a substantial change and is consistent with the intent of the proposed amendments.

In light of all of the foregoing, the Commission has determined to adopt the amendments in the form set forth below.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to 10 CFR Part 50 are published as a document subject to codification, to be effective March 11, 1973.

38 FR 4385
Published 2/14/73
Effective 3/16/73

Reactor Containment Leakage Testing for Water-Cooled Power Reactors

On August 27, 1971, the Atomic Energy Commission published in the FEDERAL REGISTER (36 FR 17053) a proposed amendment to its regulations in 10 CFR Part 50 which would specify the minimum containment leakage test requirements for water-cooled power reactors.

Interested parties were invited to submit written comments and suggestions for consideration in connection with the proposed amendment within 60 days after publication in the FEDERAL REGISTER. Upon consideration of the comments received, and other factors involved, the Commission has adopted the proposed amendment, with certain modifications in the form set forth below.

Significant differences from the amendment published for comment are: (1) Modification of procedures governing containment inspection and leak detection surveys, as a prerequisite to conducting formal leakage tests, and clarification of the basis for reporting pretest leakage values to the Commission, (2) establishment of criteria for deferring certain safety-related systems from regularly scheduled Type A containment leakage tests, (3) incorporation by reference of the recently-issued American National Standard for leakage rate testing of containment structures for nuclear reactors into the regulation, (4) inclusion of nitrogen gas as a suitable testing medium for testing the leaktightness of valves, and (5) inclusion of water-leakage test and acceptance criteria for containment isolation valves which are sealed against containment atmosphere outleakage during a design basis accident condition by means of a seal-water system. In addition, editorial and format changes were made.

With regard to item (1) above, the rule set forth below requires the licensee to identify specifically those components whose initial poor leak-tightness performance precluded completion of a Type A containment leakage test and to report this information to the Commission. The proposed rule would not have required the reporting of such information unless attempts to reduce the leakage rate of poor leak-tight components failed to meet minimum leak-tightness acceptance criteria. Thus, components which required frequent adjustments or repair in order to meet allowable leakage limits will be identified and the specific reductions in leakage rate values, resulting from such adjustments, will be reported to the Commission. The identification of such components will provide the AEC with a sounder basis for judging whether or not containment leakage rates could have been exceeded in the unlikely event a design basis accident were to occur. In addition, such identification may provide insight into the frequency and kinds of adjustments being made to components to meet the minimum acceptable leakage limits and a basis for either establishing a more frequent containment leakage test schedule, or modifying or replacing components.

With regard to item (2) above, the rule set forth below specifies criteria by which the licensee may for certain safety-related systems temporarily dispense with drainage and venting to containment atmosphere during Type A containment leakage tests. The proposed rule had specified that all systems which would connect directly with the containment atmosphere and would become an extension of the containment boundary should be vented to containment. Strict compliance with this rule would have required removing certain safety-related systems from service for the duration of the test and would limit the performance of the overall integrated containment leakage tests to those times when there would be no fuel in the reactor. This procedure is considered to be unnecessarily conservative.

The inclusion of all safety-related systems in the overall integrated containment leakage test can be accomplished while the reactor is fueled, and in a state of potential criticality, by maintaining the minimum number of safety-related systems in an operable state until all systems are tested. Another option is to periodically test the containment isolation valves in these safety-related systems in accordance with the rule set forth below. This would also assure that the requisite level of plant safety will be provided during the containment leakage test program without compromising the requirements for including all systems which penetrate the containment boundary in the leakage test.

The proposed rule required the use of test methods described in proposed American Nuclear Society Standard ANS 7.60 by referencing a portion of the proposed standard. On March 16, 1972, the American National Standards Institute approved ANS 7.60 and officially issued it for use as ANSI N45.4-1972, American National Standard, "Leakage Rate Testing of Containment Structures for Nuclear Reactors." The standard has been reviewed for compatibility with the proposed rule and it was concluded that incorporation of the requirements of ANSI N45.4-1972 by reference would enhance the quality of containment leak testing. Accordingly, the rule set forth below now specifies that the Type A containment leakage tests shall be conducted in accordance with the provisions of ANSI N45.4-1972.

The proposed rule limited the leakage testing medium for reactor containment isolation valves to air, which is widely used in the containment leakage testing program. However, the use of nitrogen gas for valve leakage testing is also tech-

nically satisfactory. Accordingly, the rule set forth below specifies that either air or nitrogen may be used as the testing medium in the conduct of the valve leakage tests.

The rule set forth below expands upon the requirement contained in the proposed rule for testing valves, sealed with water from a seal-water system, by including minimum water test pressure and test acceptance criteria.

The proposed rule required that the valves be subjected to a seal-wafer system operability test to establish that the valves could be satisfactorily pressurized with seal-water. There was no requirement to measure the rate at which water leaked past the valve. It had been assumed that the seal-water inventory would be adequate to seal the valves against outleakage of containment atmosphere during the design basis accident condition. However, the lack of a specific water inventory criterion against which actual valve leakage rates would be measured, could result in an inadequate supply of seal-water for valve sealing with attendant loss of the containment isolation function. Accordingly, a provision has been incorporated into the rule set forth below which requires that the valve leakage rate shall not exceed the seal-water inventory, on the assumption that the seal-water system will be pressurized for 30 days at 110 percent of the calculated peak containment internal pressure related to the design basis accident. With the inclusion of this requirement, the requirements for conducting only a seal-water system operability test were eliminated.

Containment is provided for water-cooled power reactors to prevent uncontrolled releases of radioactive materials to the environment if the barriers provided by the fuel cladding and reactor coolant pressure boundary should be breached. Testing the reactor containment for leakage helps to assure that:

(a) Leakage of the primary reactor containment and associated systems is held within allowable leakage rate limits as specified in the technical specifications or associated bases of the license;

(b) Periodic surveillance is performed to assure proper maintenance and leak repair during the life of the containment; and

(c) The containment will continue to perform its function throughout the life of the plant.

The amendment which follows provides uniform requirements for containment leakage testing. It specifies the minimum requirements for periodic verification by tests of the leak-tight integrity of the primary reactor containment and associated systems for water-cooled power reactors, and the acceptance criteria for such tests.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to Title 10, Chapter I, Code of Federal Regulations, Part 50, is published as a document subject to codification to be effective on March 16, 1973.

38 FR 5997
Published 3/6/73

Reactor Containment Leakage Testing for Water-Cooled Power Reactors

Correction

In FR Doc. 73-2786 appearing at page 4385 in the issue of Wednesday, February 14, 1973, the following changes should be made:

38 FR 11445
Published 5/8/73
Effective 6/8/73

Licensing of Facilities Used for Industrial or Commercial Purposes

On October 15, 1971, the Atomic Energy Commission published in the FEDERAL REGISTER (36 FR 20051) proposed amendments to 10 CFR part 50 of its regulations which would define the circumstances under which research and development and training reactors will be considered to be used "substantially for industrial or commercial purposes", and thus licensable by the Commission under section 103 of the Atomic Energy Act of 1954, as amended (the Act). Interested persons were invited to submit written comments and suggestions for consideration within 60 days after publication of the notice of proposed rulemaking in the FEDERAL REGISTER. No comments were received. The Commission has adopted the amendments in the form set out in the notice of proposed rulemaking.

Public Law 91-560, enacted on December 19, 1970, amended the Act by, among other things, eliminating the requirement that the Commission make "a finding in writing that any type of utilization or production facility has been sufficiently developed to be of practical value for industrial or commercial purposes" before the Commission may issue commercial licenses under section 103 of the Act for such facilities. Under section 102 of the Act, as amended by Public Law 91-560, utilization or production facilities must, with certain exceptions, be licensed under section 103. Applications for licenses under section 103 are subject to the preliminary antitrust review provisions of section 105, to the mandatory hearing requirements of section 189, and to the requirements for review by the Advisory Committee on Reactor Safeguards in section 182.

The legislative history of Public Law 91-560 indicates that the principal purpose of the legislation was to subject new applications for production and utilization facilities formerly licensed under section 104b. of the Act as research and development facilities—power reactors and fuel reprocessing plants—to licensing under section 103. The legislative history also shows that the Congress was aware that some applications for facilities to be licensed under section 104c. as research reactors might also be considered "for industrial or commercial purposes" if such reactors had such a purpose to a significant extent [S. Rept. No. 91-1247, 91st Cong., 2d Sess., at 28 (1970)]. Such facilities might include, for example, research reactors that are used to produce radioisotopes for sale or that are used for neutron radiography on a commercial basis.

The amendments to § 50.22 of part 50 which follow categorize as a facility "for industrial or commercial purposes" a facility designed or used so that more than 50 percent of the annual cost of owning and operating the facility is devoted to the production of materials, products, or energy for sale or commercial distribution, or for the sale of services, other than research and development or education or training. Under this construction, a license issued to a nonprofit educational institution for a facility for education or training purposes only would continue to be licensed under section 104c. of the Act, since the licensed operation would not be devoted to production of goods or services for sale or commercial distribution.

It is recognized that some adjustment may be needed in the license fees payable by holders of licenses that presently fall within the "research reactor" category in 10 CFR part 170, Fees for Facilities and Materials Licenses Under the Atomic Energy Act of 1954, as amended. Such adjustments and related changes in 10 CFR part 170 will be considered by the Commission as part of its continuing consideration of the license fees assessed against Commission licensees.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to title 10, chapter 1, Code of Federal Regulations, part 50 are subject as a document subject to codification to be effective June 8, 1973.

38 FR 19012
Published 7/17/73
Effective 8/16/73

Fracture Toughness and Surveillance Program Requirements

On July 3, 1971 the Atomic Energy Commission published in the FEDERAL REGISTER (36 FR 12697) proposed amendments to its regulations in 10 CFR Part 50 which would add new appendices entitled, "Appendix G, Fracture Toughness Requirements," and "Appendix H, Reactor Vessel Material Surveillance Program Requirements."

Interested persons were invited to submit written comments within 60 days. Upon consideration of the comments received and other factors involved, the Commission has adopted the proposed amendments with certain modifications in the form set forth below.

Significant differences in Appendix G from the amendments published for comment are:

(1) Terminology was changed to be consistent with that of the ASME Code.[1]

[1] American Society of Mechanical Engineers Boiler and Pressure Vessel Code, section III, "Rules for the Construction of Nuclear Power Plant Components," 1971 Edition, and addenda through the Winter, 1972 Addenda.
[2] American Society for Testing and Materials.

(2) The method of combining the results of the Charpy and dropweight tests to get a combined measure of toughness was changed.

The proposed rule would have required characterization of the fracture toughness of the ferritic materials in the reactor coolant pressure boundary in terms of the temperature dependence of two quantities: (a) Energy absorbed in Charpy V-notch impact tests (ASTM Standard A–370) and (b) the nil-ductility transition (NDT) temperature obtained from dropweight tests (ASTM Standard E–208). Charpy tests were to be run at appropriate temperatures to characterize the transition from fully ductile, "upper shelf," behavior to low-energy, "brittle," behavior. To obtain a toughness characterization that depended on both types of tests, the "Charpy curve" was to be adjusted upward on the temperature scale to make the 15 ft. lb. level correspond to the NDT temperature from the dropweight tests.

These amendments continue the requirement contained in the proposed rule that fracture toughness be measured by the Charpy test and the dropweight test. However, to reflect comments urging consistency with the ASME Code, fracture toughness of the material is characterized by its reference temperature, RT_{NDT}. This temperature is the higher value of the NDT temperature from the dropweight test or the temperature that is 60° F below the temperature at which Charpy test data meet a specified toughness level (50 ft. lbs. and 35 mils lateral expansion).

(3) The concept of a lowest pressurization temperature given in the proposed rule was changed to a concept based on fracture mechanics that allows a continuous buildup of pressure as a function of temperature and wall thickness.

The proposed rule would have required a "thickness correction" whereby the Charpy curve was to be shifted up the temperature scale 7°F per inch of material thickness. The thickness correction would have been added to the shift required for consistency between the two types of toughness tests to obtain a curve of "adjusted fracture energy" versus temperature. Fracture control would have been achieved by requiring the "lowest pressurization temperature" at which system pressure could exceed 25 percent of normal operating pressure, or at which the rate of temperature change could exceed 50°F/hr., to be the temperature at which the adjusted fracture energy exceeded a certain level, which was higher for thick material than for thin.

Many of the comments questioned the validity of the dependence placed on the Charpy test by the proposed rule. The thickness correction was considered excessive for thick sections and inadequate for thin sections. Other comments asked that the rules treat stresses more quantitatively to take account of the operators' ability to control pressure and rate of temperature change and the designers' ability to calculate pressure and thermal stresses. Specifically, they urged the adoption of the approach that now appears in the 1972 Summer Addenda to the ASME Code. The proposed rules were also revised to reflect these comments. As required by these amendments, fracture control is achieved by requiring that stress in the pressure boundary be limited as a function of the metal temperature relative to the reference temperature, RT_{NDT}, and as a function of material thickness according to the "K_{IR} curve" given in the ASME Code. Taken from fracture mechanics, the term "stress intensity factor" (K) defines a quantity that is proportional to the product of gross stress and the square root of crack depth, and includes factors to account for crack shape and for the manner of loading. Critical values of K, determined from tests in which precracked specimens are loaded to failure, are a convenient measure of fracture toughness, because differences in crack size and shape and differences in manner of loading between specimen and component can be treated quantitatively. The K_{IR} curve in the ASME Code gives allowable values of fracture toughness as a function of temperature relative to RT_{NDT}. The curve is based on data obtained from tests of large specimens in the HSST* program. Rather than require the estimation of maximum expected flaw size, these amendments require that in areas of the reactor vessel remote from discontinuities, the assumed flaw size be proportional to wall thickness. Thus, from the value of K_{IR} at a given temperature, allowable stress values are obtained that are inversely proportional to the square root of wall thickness.

(4) Fracture control procedures described in paragraph (3), above, are supplemented in these amendments by a requirement that whenever the core is critical, the metal temperature of the reactor vessel shall exceed specified values dependent on the concurrent stress level.

(5) The Charpy V-notch upper-shelf energy requirements for beltline region materials was set at 75 ft. lbs. for all cases, without distinction as to the predicted amount if irradiation damage.

(6) Fracture toughness requirements for the various components of the pressure boundary were separated to reflect comments suggesting that the rules fit the anticipated severity of service to which the component might be subjected.

(7) The definition of "beltline region of the reactor vessel" was broadened to include more shell material above and below the core.

Significant differences in Appendix H from the amendments published for comment are:

(1) Terminology was changed to be consistent with that of Appendix G and the ASME Code. In particular, the adjustment for irradiation effects is described in these amendments as an adjustment of the reference temperature, RT_{NDT}, and the amount of temperature shift is determined by a slightly different treatment of the Charpy data than that given in the proposed amendment.

(2) Provision was made for accelerated irradiation capsules and for modification of capsule withdrawn schedules based on results of tests of specimens that received the accelerated irradiation.

(3) A general provision for an integrated surveillance program was substituted for the specific requirements given in the proposed rule. It appeared from comments that it would be impractical to meet the requirements of the proposed rule for commonality of multiple reactors.

Appendices G and H are intended to implement General Design Criterion 31, "Fracture Prevention of Reactor Coolant Pressure Boundary," of 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," to the extent described below. The margin of safety against brittle fracture will be controlled more quantitatively by these amendments than by the proposed rule, particularly with regard to specific guidelines for the treatment of heatup and cooldown conditions. Appendices G and H track the language of the ASME Code and have adopted certain of its requirements but also include several key supplemental requirements. For the vessel beltline, inservice requirements are based on the reference temperature as adjusted to account for irradiation damage. There is also an additional fracture toughness requirement in the form of shelf energy values from the Charpy curve for the material in its unirradiated condition.

Although the requirements of Appendices G and H become effective on August 16, 1973, the Commission recognizes that there may be an interim period when, for plants now under construction, the method of compliance with certain provisions may be determined on a case-by-case basis. For example, if the test data needed to establish certain fracture control requirements are not available because they were not required at the time material sampling was done, estimated values that are appropriately conservative may be acceptable.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50, are published as a document subject to codification to be effective on August 16, 1973.

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*Heavy Section Steel Technology Program, conducted at Oak Ridge National Laboratory.

38 FR 22221
Published 8/17/73
Effective 9/17/73

Requalification Requirements for Operating Personnel of Production and Utilization Facilities

On June 14, 1972, the Atomic Energy Commission published in the FEDERAL REGISTER (37 FR 11785) for public comment proposed amendments to 10 CFR Part 55, Operators' Licenses, which would (1) provide for the use of requalification programs for operating personnel as a condition of license renewal and (2) establish minimum requirements for requalification programs for production and utilization facility operators and senior operators.

All interested persons were invited to submit comments or suggestions in connection with the proposed amendments within 60 days after publication of the notice of proposed rulemaking in the FEDERAL REGISTER. After careful consideration of the comments received in response to the notice of proposed rule making and other factors involved, the Commission has decided to adopt the amendments in the form set out below. The amendments as adopted reflect the suggestions in a number of the comments. The principal changes from the proposed amendments are as follows:

1. A new § 50.34(b)(8) has been added which requires that each application for a license to operate a facility include a description and plans for implementation of an operator requalification program which, as a minimum, meets the requirements of Appendix A of Part 55.*

2. A new § 50.54(i–1) has been added which:

a. Clarifies that Appendix A of Part 55 is applicable to requalification programs for operators and senior operators of all production and utilization facilities;

b. Specifies that within three months after issuance of an operating license the facility licensee shall have in operation an operator requalification program;

c. Provides that, notwithstanding the provisions of § 50.59, the licensee shall not, except as specifically authorized by the Commission, make a change in an approved operator requalification program by which the scope, time allotted for the program or frequency in conducting different parts of the program is decreased; and

d. Requires holders of operating licenses in effect on the effective date of these amendments to submit an operator requalification program for Commission approval and concurrently implement that program within three months after the effective date of the amendments.

3. Section 55.31 has been revised to require a licensee, who has not, for any reason, been actively performing the functions of an operator or a senior operator for a period of four months or longer, to demonstrate to the Commission that his knowledge and understanding of facility operation and administration are satisfactory before resuming his licensed duties as an operator or a senior operator.

4. Section 55.33 has been revised to permit the submission to the Commission in an application for license renewal filed within two years after the effective date of these amendments a statement as to partial completion of a requalification program in cases where an operator has not completed the entire program at the time of license renewal because of the time necessary for the facility licensee to implement the requalification program prescribed in the amendments. The operator will be required to submit a statement covering those portions of the requalification program which have been completed as of the date of the application.

5. A new Section 1 entitled, "Schedule," has been added to Appendix A and existing Sections 1 through 5 of Appendix A have been renumbered 2 through 6, respectively. New Section 1 requires the requalification program to be conducted for a continuous period not to exceed two years and upon conclusion to be promptly followed by successive requalification programs.

6. Section 2 of Appendix A entitled, "Lectures", has been revised to:

a. Permit the use of an annual written examination given to each operator or senior operator to form the basis for the lecture series. Only areas where improved knowledge is required of an operator need be covered in the lecture series;

b. Permit the use of training aids such as films and videotapes; and

c. Encourage individual study on the part of each operator, but provide that a requalification program based solely upon the use of films, videotapes and individual study is not an acceptable substitute for a lecture series.

7. Section 3 of Appendix A entitled, "On-the-Job Training," has been revised to:

a. Permit the substitution of control manipulations which demonstrate skill and/or familiarity with plant control systems to satisfy the requirements that an operator manipulate the plant controls;

b. Require that for reactors, the plant control manipulations consist of at least 10 reactivity control manipulations in any combination of reactor startups, reactor shutdowns or other control manipulations which demonstrate skill and/or familiarity with reactivity control systems; and

c. Permit the required control manipulations to be performed on plant simulators which reproduce the general operating characteristics of the facility involved and which have arrangements and controls similar to that of the facility. This modification is intended to allow the use of simulators which are similar to but not identical to the controls of the production or utilization facility to which the requalifiation program applies.

8. Section 4 of Appendix A entitled, "Evaluation," has been revised to:

a. Permit the use of annual written examinations to form the basis for the formal lecture series coverage for each operator or senior operator;

b. Require that if a plant simulator is used in the evaluation portion of the requalification program, it accurately reproduce the operating characteristics of the facility involved and closely parallel the arrangement of instrumentation and controls of the facility; and

c. Require each licensed operator and senior operator to participate in an accelerated requalification program where evaluation of performance clearly indicates the need.

9. Section 5 of Appendix A entitled, "Records", has been revised to better specify the content of records to be maintained to document each licensed operator's and senior operator's participation in the requalification program.

10. Section 6 of Appendix A entitled, "Alternative Training Programs," has been revised to require Commission approval of alternative requalification programs conducted by persons other than the facility licensee.

11. A new Section 7 entitled "Applicability to Research and Test Reactors and Non-Reactor Facilities" has been added to:

a. Clarify the applicability of the requirements of Appendix A with regard to research and test reactors and nonreactor facilities, such as fuel reprocessing plants, and

b. Require that significant deviations from the provisions of Appendix A of Part 55 in a proposed requalification program for such facilities be justified when the program is submitted to the Commission for approval.

12. Minor editorial changes have also been made to 10 CFR Part 55.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 50 and 55 are published as a document subject to codification to be effective on September 17, 1973.

38 FR 30251
Published 11/2/73
Effective 12/3/73

Standardization of Design; Licenses to Manufacture Nuclear Power Reactors; Miscellaneous Amendments

See Part 2 Statements of Consideration.

38 FR 31279
Published 11/13/73

Seismic and Geologic Siting Criteria

See Part 100 Statements of Consideration.

39 FR 1001
Published 1/4/74
Effective 2/4/74

Acceptance Criteria for Emergency Core Cooling Systems for Light Water-Cooled Nuclear Power Reactors

On November 30, 1971, the Atomic Energy Commission published in the FEDERAL REGISTER (36 FR 22774) a notice scheduling a legislative-type public rulemaking hearing on January 27, 1972, before a hearing board consisting of Nathaniel H. Goodrich, Esq., Chairman, Dr. Lawrence R. Quarles, and Dr. John H. Buck, concerning its interim statement of policy establishing acceptance criteria for emergency core cooling systems for light water-cooled nuclear power reactors, published June 29, 1971 (36 FR 12247). Amendments to the interim criteria were published in the FEDERAL REGISTER on December 18, 1971 (36 FR 24082) in a notice that stated that the amendments would also be considered at the rulemaking hearing.

Participation in the rulemaking hearing was extensive. The primary participants included the Commission Regulatory Staff, four reactor manufacturers, a consolidated group of electric utility companies, and the Consolidated National Intervenors (CNI), a group of about 60 organizations and individuals. In addition, three states, the Lloyd Harbor Study Group, and several individuals participated to a lesser degree. The hearings lasted a total of 125 days and generated a record of more than 22,000 pages of transcript and thousands of pages of written direct testimony and exhibits. Oral argument from the seven principal participants was heard by the Commission on October 9, 1973.

In implementation of the National Environmental Policy Act of 1969 (Pub. L. 91-190), a Draft Environmental Statement concerning the proposed rulemaking was forwarded to the Council on Environmental Quality on December 6, 1972, and circulated for comment to participants in the hearing and interested Federal Agencies on December 7, 1972. Notice of public availability of the Statement and an invitation for comment was also published in the FEDERAL REGISTER at that time. Comments on the Draft Statement were received and a Final Environmental Statement was published on May 9, 1973.

The Commission noted in the Interim Policy Statement:

> Protection against a highly unlikely loss-of-coolant accident has long been an essential part of the defense-in-depth concept used by the nuclear power industry and the AEC to assure the safety of nuclear power plants. In this concept, the primary assurance of safety is accident prevention by correctly designing, constructing, and operating the reactor. Extensive and systematic quality assurance practices are required and applied at every step to achieve this primary assurance of safety. Nevertheless, deviations from expected behavior are postulated to occur, and protective systems are installed to take corrective action as required in such events. Notwithstanding all this, the occurrence of serious accidents is postulated, in spite of the fact that they are highly unlikely, and engineered safety features are installed to mitigate the consequences of these unlikely events. The loss-of-coolant accident is such a postulated improbable accident; the emergency core cooling system is one of the engineered safety features installed to mitigate its consequences.

The Commission has adopted new regulations, set forth below, dealing with the effectiveness of ECCS. In a 140 page opinion issued on December 28, 1973, the Commission discussed the changes from the interim acceptance criteria and the technical reason for them. Copies of this opinion are available for inspection and copying at the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C.

The principal changes from the Interim Policy Statement are as follows. The old criterion number one, specifying that the temperature of the zircaloy cladding should not exceed 2300°F, is replaced by two criteria, lowering the allowed peak zircaloy temperature to 2200°F and providing a limit on the maximum allowed local oxidation. The other three criteria of the IAC are retained, with some modification of the wording. These three criteria limit the hydrogen generation from metal-water reactions, require maintenance of a coolable core geometry, and provide for long-term cooling of the quenched core.

The most important effect of the changes in the required features of the evaluation models is that swelling and bursting of the cladding must now be taken into consideration when they are calculated to occur, and that the maximum temperature and oxidation criteria must be applied to the region of clad swelling or bursting when the maximum temperature and oxidation are calculated to occur there. Another important change is the requirement that, in the steady state operation just before the postulated accident, the thermal conductance of the gap between the fuel pellets and the cladding should be calculated taking into consideration any increase in gap dimensions resulting from such phenomena as fuel densification, and should also consider the effects of the presence of fission gases. When these effects are taken into consideration a higher stored energy may be calculated. Other changes in the evaluation models are mostly in the direction of replacing previous broad conservative assumptions with more detailed calculations where new experimental information is available or where better calculational methods have been developed.

The wording of the definition of a loss-of-coolant accident has been modified to conform to its long-accepted usage, limiting it to breaks in pipes. The new regulations also require a more complete documentation of the evaluation models that are used.

The Commission believes that the implementation of the new regulations will ensure an adequate margin of performance of the ECCS should a design basis LOCA ever occur. This margin is provided by conservative features of the evaluation models and by the criteria themselves. Some of the major points that contribute to the conservative nature of the evaluations and the criteria are as follows:

(1) *Stored heat.* The assumption of 102 percent of maximum power, highest allowed peaking factor, and highest estimated thermal resistance between the UO_2 and the cladding provides a calculated stored heat that is possible but unlikely to occur at the time of a hypothetical accident. While not necessarily a margin over the extreme condition, it represents at least an assumption that an accident happens at a time which is not typical

(2) *Blow-down.* The calculation of the heat transfer during blowdown is made in a very conservative manner. There is evidence that more of the stored heat would be removed than calculated, although there is not yet an accepted way of calculating the heat transfer more accurately. It is probable that this represents a conservatism of several hundred degrees F. in stored energy after blowdown, most of which can reasonably be expected to carry over to a reduction in the calculated peak temperature of the zircaloy cladding.

(3) *Rate of heat generation.* It is assumed that the heat generation rate from the decay of fission products is 20 percent greater than the proposed ANS standard. This represents an upper limit to the degree of uncertainty. The assumption that the fission product level is that resulting from operation at 102 percent of rated power for an infinite time represents an improbable situation, with a conservatism that is probably in the range of 5 to 15 percent. The use of the Baker-Just equation for calculating the heat generation from the steam oxidation of zircaloy should also provide some conservatism, but the factor is uncertain.

(4) *The peak temperature criterion.* The limitation of the peak calculated temperature of the cladding to 2200° F and the stipulation that this criterion be applied to the hottest region of the hottest fuel rod provide a substantial degree of conservatism. They ensure that the core would suffer very little damage in the accident.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 55[illegible] and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50, are published as a document subject to codification to be effective on February 4, 1974.

39 FR 4871
Published 2/8/74
Effective 2/8/74

Exemption for Facilities Processing Irradiated Materials Containing Limited Quantities of Special Nuclear Material

Subsection 11 v. of the Atomic Energy Act of 1954, as amended, defines "production facility," as "(1) any equipment or device determined by rule of the Commission to be capable of the production of special nuclear material in such quantity as to be of significance to the common defense and security, or in such manner as to affect the health and safety of the public; • • •"

The Atomic Energy Commission has by rule defined a "production facility," as, among other things, any facility designed or used for the processing of irradiated materials containing special nuclear material except laboratory scale facilities designed or used for experimental or analytical purposes, facilities which process slightly irradiated uranium containing relatively small amounts of fission products and low levels of fission product activity, and facilities licensed under Parts 30 and 70, or equivalent regula-

tions of an Agreement State, in which irradiated material is processed on a batch basis for the separation of selected fission products and where not more than 15 grams of special nuclear material constitute a process batch. (10 CFR 50.2(a)(3)(iii)).

By letter dated June 15, 1973, PRM-50-7, General Electric Company, Vallecitos Nuclear Center, Pleasanton, California, petitioned the Commission to amend the exception to the definition of "production facility" set out in § 50.2(a)(3)(iii). The exception in § 50.2(a)(3)(iii) applies to facilities in which processing of irradiated materials containing special nuclear material is conducted pursuant to a license issued under Parts 30 and 70 of the Commission's regulations, or equivalent regulations of an Agreement State, which authorizes the processing of irradiated special nuclear material on a batch basis for the separation of selected fission products and limits the process batch to "not more than 15 grams of special nuclear material." The petitioner requested that the process batch limit be changed to "not more than 100 grams of special nuclear material."

The Commission has concluded that the relatively modest increase, up to 100 grams, in the batch sizes of special nuclear material, specifically uranium enriched in the isotope 235, would not alter, materially, the radiation hazards involved for this type of operation and that no additional safety precautions are required beyond those imposed by Commission licensing and regulation of the use of the byproduct and special nuclear material under 10 CFR Parts 30 and 70 or equivalent regulations of an Agreement State. Accordingly, the Commission has adopted the amendment set out below which changes the batch limit in § 50.2(a)(3)(iii) to "not more than 100 grams of uranium enriched in the isotope 235 and not more than 15 grams of any other special nuclear material." Inasmuch as the amendment set forth below is of a minor nature, good cause exists for omitting notice of proposed rule making and public procedure thereon as unnecessary.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to 10 CFR Part 50, is published as a document subject to codification.

39 FR 5773
Published 2/15/74
Effective 3/18/74

Codes and Standards for Nuclear Power Plants

On November 6, 1973, the Atomic Energy Commission published in the FEDERAL REGISTER (38 FR 30564) proposed amendments to its regulations, 10 CFR Part 50, "Licensing of Production and Utilization Facilities," and 10 CFR Part 115, "Procedures for Review of Certain Nuclear Reactors Exempted from Licensing Requirements," which would incorporate by reference new addenda to specified published industry codes.

The proposed amendments to § 50.55a and § 115.43 would provide that the editions of referenced addenda whose requirements must be met include only those addenda through the Summer 1973 Addenda as appropriate. Minor editorial changes to update references in §§ 50.55a and 115.43a were also included.

Interested persons were invited to submit written comments within 30 days. No comments were received. The Commission has adopted the proposed amendments without modification.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 50 and 115 are published as a document subject to codification, to be effective on March 18, 1974.

39 FR 10554
Published 3/21/74
Effective 4/22/74

Amendments and Change Procedures for Facility Licenses and Authorizations

On August 24, 1973, the Atomic Energy Commission published in the FEDERAL REGISTER (38 FR 22796) proposed amendments to its regulations in 10 CFR Part 50, Licensing of Production and Utilization Facilities, and 10 CFR Part 115, Procedures for Review of Certain Nuclear Reactors Exempted from Licensing Requirements, which would simplify the procedural process for AEC authorization of changes in production and utilization facilities and technical specifications relating to such facilities. The proposed amendments to Part 50 would continue to permit facility licensees, pursuant to § 50.59 of Part 50, to make changes in the facility and perform tests and experiments not described in the safety analysis report without prior Commission approval unless the change, test or experiment involves an unreviewed safety question or a change in the technical specifications. For proposed changes, tests or experiments which involve an unreviewed safety question or a change in technical specifications, an amendment to the operating license would be required, pursuant to § 50.90. With respect to an application for amendment of a license which involves a significant hazards consideration, the Commission would act upon the application for amendment after giving notice of its proposed action, as required by section 189 of the Atomic Energy Act of 1954, as amended and § 2.105 of 10 CFR Part 2. Notice of issuance of an amendment which did not involve a significant hazards consideration would be published in the FEDERAL REGISTER pursuant to § 2.106 of 10 CFR Part 2.

After consideration of the comments received and other factors involved, the Commission has adopted the amendments as published for comment.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to 10 CFR Parts 50 and 115 are published as a document subject to codification.

39 FR 13258
Published 4/12/74

Amendments and Change Procedures for Facility Licenses and Authorizations; Correction

In FR Doc. 74-6550, published March 21, 1974, at 39 FR 10554, paragraph 3 is corrected to read as follows:

39 FR 14506
Published 4/24/74
Effective 4/24/74

Pre-Construction Permit Activities

On February 5, 1974, the Atomic Energy Commission published in the FEDERAL REGISTER (39 FR 4582) proposed amendments to its regulations, 10 CFR Part 2, Rules of Practice, and 10 CFR Part 50, Licensing of Production and Utilization Facilities, which would provide for a procedure different from that set forth in § 50.12(a) of the Commission's present regulations in 10 CFR Part 50 whereby site preparation and excavation and certain other on-site activities could be undertaken prior to issuance of a construction permit for a nuclear power reactor. Interested persons were invited to submit comments within 30 days following publication, and a number of comments were received.

After consideration of the comments received, and other factors involved, the Commission has adopted the amendments in the form set out below. The significant differences from the amendments published for comment are the following: (1) Whichever part of the application and material to accompany the application is filed first must include the general information required by § 50.33 and the technical information required by § 50.34(a)(1) of 10 CFR Part 50 in addition to the license fee and restricted data agreement as required under the proposed amendments. (2) In response to several comments, the amendments adopted provide that separate hearings and decisions on issues covered by Appendix D of Part 50 of the Commission's regulations and site suitability need not be held and issued if the parties agree otherwise or the rights of any party would be prejudiced thereby. Also, unless the parties agree otherwise or the rights of any party would be prejudiced, any separate hearing on issues covered by Appendix D of Part 50 and site suitability must be commenced no later than 30 days after issuance by the regulatory staff of its final environmental impact statement. (3) A provision has been added to § 2.761a of 10 CFR Part 2 in response to a comment to make it clear that the section does not preclude separate hearings and decisions on other particular issues. (4) In response to several comments the term "site exploration" has been deleted from § 50.10(e)(1) of 10 CFR Part 50 to avoid a possible conflict with § 50.10(c)(1). (5) The amendment to § 50.12 of 10 CFR Part 50 has been deleted as unnecessary in light of the Commission's policy of granting exemptions from § 50.10(c) sparingly and only in cases of undue hardship. (6) The definition of "commencement of construction" in 10 CFR 50.10(c) has

been clarified and simplified by deleting the reference to "nonnuclear facilities." The Commission believes that on-site construction of "nonnuclear facilities" would constitute "substantial action that would adversely affect the natural environment of a site" and that specific reference to "nonnuclear facilities" is unnecessary to effectuate the purposes of the prohibition. (7) The scope of work that may be routinely authorized under § 50.10(e)(1) has been clarified and limited to exclude the driving of piles and installation of foundation walls and slabs for structures, systems, and components subject to Appendix B to 10 CFR Part 50 (Quality Assurance Criteria). Provision has been made for consideration by atomic safety and licensing boards of the safety-related aspects of site suitability as a prerequisite to routine authorizations and § 2.101 (a) of 10 CFR Part 2 has been modified to assure filing of the necessary data. Additional on-site work could be authorized by a supplemental authorization under appropriate circumstances but only after a determination by the hearing board that there were no unresolved safety issues relating to the additional work that would constitute good cause for withholding authorization. The changes described in (7) above have been adopted by the Commission to ensue that there would be full public participation with respect to the review of site suitability issues which are related to both environment and safety, and other safety issues directly related to any one-site work on safety related structures, systems and components that may be authorized beyond excavation, prior to grant of any authorization to conduct on-site work.

The limitation of the scope of work that would be authorized is also responsive to one of the comments which suggested that the Commission should not allow any on-site work related to radiological safety matters prior to a hearing and decision on those matters. The Atomic Energy Act of 1954, as amended, does not by its terms prohibit commencement of construction of a nuclear facility prior to receipt of a construction permit, although the Act does provide that a permit authorizing construction of the facility must be obtained. The Commission is thus authorized to apply its technical expertise and develop a practical administrative interpretation of the Act as a whole in determining at what point in time a construction permit must be obtained. Prior to the enactment of the National Environmental Policy Act of 1969 (NEPA) and the amendments to § 50.10 adopted by the Commission on March 21, 1972 (37 FR 5745), site excavation for safety-related structures was generally permitted to be undertaken by applicants without any prior Commission review. The essential distinction between the past situation and the present one is that NEPA now applies to certain Commission actions. However, this essential difference is accommodated in the amendments by the requirement that there be a full NEPA review and hearing on NEPA issues covered by the Commission's NEPA regulations prior to authorizing any on-site work otherwise generally prohibited by § 50.10 (c). The approach in the instant rule, with its provisions for full review of and public participation on relevant issues and limitation of allowable work so as to include excavation for safety-related structures but not installation of safety-related structures (structures subject to the Commission's "Quality Assurance Criteria") except upon consideration by the atomic safety and licensing board of specified additional safety matters, is consistent with the Commission's past practice as described above. The Commission believes that this approach reflects a reasonable approach toward timely decisionmaking within the framework of the present Act.

Under the instant rule, the hearing on site suitability issues prior to grant of an authorization under §50.10(e)(1) would be confined to whether, based upon the available information and review to date, there is reasonable assurance that the proposed site is a suitable location for a nuclear power reactor of the general size and type proposed from the standpoint of radiological health and safety considerations under the Act and the Commission's rules and regulations promulgated pursuant thereto. It should be noted in this respect that the amendments specifically provide that any activities undertaken would be entirely at the risk of the applicant and, except for the hearing and decision on safety issues described above, the grant of authorization would have no bearing on the issuance of a construction permit with respect to the requirements of the Atomic Energy Act of 1954, as amended, and rules, regulations, or orders promulgated pursuant thereto. Thus, while the conduct of some of the on-site activities may produce information that would have a bearing on the Commission's radiological safety review, any grant of authorization to conduct on-site activities could not serve to prejudice the outcome of the radiological safety review itself.

The rules adopted herein would not preclude the presiding officer from reopening the NEPA and limited safety hearing after grant of authorization under § 50.10(e) to consider new information upon motion by an interested party or on its own initiative. In the event the presiding officer determined that the record should be reopened, the resolution of any issues that may be raised regarding whether the outstanding authorization should continue in effect would be governed by principles similar to those that apply in the case of reopened proceedings on licenses and permits. Of course, nothing in the instant amendments would preclude the presiding officer from declining to make a favorable initial decision on NEPA and the limited safety issues immediately effective at the outset, or preclude the Commission or Atomic Safety and Licensing Appeal Board on review pursuant to 10 CFR 2.730 and 2.787(b), or 2.762, from staying the effectiveness of the initial decision, and thereby in effect stay any issuance of an authorization to conduct on-site work that could otherwise have been issued pursuant to an immediately effective initial decision on these issues. It should also be clear that sufficient information regarding the proposed plant is required to be included in the applicant's environmental report and the record of the NEPA hearing in order to conduct a reasonable cost-benefit analysis as required by NEPA.

A number of comments suggested that the Commission should adopt a more liberal policy regarding granting of exemptions from § 50.10(c) pursuant to § 50.12(a). The Commission has rejected this suggestion and will continue the present policy of granting such exemptions sparingly and only in cases of undue hardship. A number of comments also suggested that the provisions in § 50.10(e) requiring a full NEPA review and hearing prior to grant of authorization were unnecessary and would unduly delay plant construction. The Commission believes, however, that such provisions, which facilitate public participation and ensure appropriate consideration of NEPA matters, are in the public interest and should be retained in the rule.

Consideration of the instant amendments arises at a time of deep national concern over energy sources and supply—a concern which the Commission fully shares. The amendments should reduce the time required to bring on line nuclear power plants which satisfy all environmental and safety requirements. Pursuant to the Atomic Energy Act of 1954 as amended, NEPA, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 2 and 50 are published as a document subject to codification. Because of the public interest in removing unnecessary obstacles to the construction of power plants needed to meet the nation's energy needs, and the fact that the amendments are of a procedural nature, the Commission has found that good cause exists for making the amendments effective without the customary 30-day notice.

39 FR 24626
Published 7/5/74
Effective 8/5/74

Technical Specifications for Fuel Reprocessing Plants

On May 2, 1973, the Atomic Energy Commission published in the FEDERAL REGISTER (38 FR 10815) for public comment proposed amendments to 10 CFR Part 50 which would specify categories of technical specifications for licenses for fuel reprocessing plants. Technical specifications set forth the specific characteristics of the facility and the conditions for its operation that are required to provide protection for the health and safety of the public.

Categories for technical specifications applicable to nuclear reactor licenses were added to § 50.36 of Part 50 by an amendment to that section published on December 7, 1968. Appropriate categories for technical specifications applicable to fuel reprocessing plants licenses had not at that time been developed. The proposed amendments would add categories of technical specifications for fuel reprocessing plants to § 50.36 by specific provisions in categories (1) "Safety limits, limiting safety system settings, and limiting control settings" and (2) "Limiting conditions for operation." Categories (3) "Surveillance requirements", (4) "Design features," and (5) "Administrative controls" do not require amendment to be applicable to fuel reprocessing plants.

In addition to the changes in § 50.36 to cover fuel reprocessing plants specifically, a number of minor editorial and clarifying changes were proposed.

All interested persons were invited to submit comments or suggestions in connection with the proposed amendments on or before September ?, 1974. After careful consideration of the comments received and other factors involved the Commission has adopted the amendments in the form set out below. The amendments as adopted reflect, in part, the suggestions made in the comments. The changes from the proposed amendments are as follows:

1. Section 50.36(c)(1)(i)(B) of the proposed rule has been clarified to indi-3.6 "Guide to Content of Technical Specifications for Fuel Reprocessing Plants."

Concurrently with the publication of this amendment the Commission is making available to the public its "Environmental Impact Appraisal of Amendment to 10 CFR Part 50 Technical Specifications for Fuel Reprocessing Plants." Copies of the "Environmental Impact Appraisal of Amendment to 10 CFR Part 50 Technical Specifications for Fuel Reprocessing Plants" may be obtained by writing the U.S. Atomic Energy Commission, Washington, D.C. 20595, Attention: Director of Regulatory Standards.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50 are published as a document subject to codification.

39 FR 26279
Published 7/18/74
Effective 8/19/74

Environmental Protection: Licensing and Regulatory Policy and Procedures

See Part 51 Statements of Consideration.

39 FR 27121
Published 7/25/74
Effective 7/25/74

MISCELLANEOUS AMENDMENTS TO CHAPTER

Notice is hereby given of the amendment of the Atomic Energy Commission's regulations in 10 CFR Parts 20, 50, and 70.

The amendments of Part 20 correct a reference to § 20.106 which appears in § 20.301 and make minor corrections in Appendix B and Appendix D.

The amendments of Part 50 correct a number of words and make an editorial change in § 50.46.

The amendment of Part 70 corrects a reference to § 73.41(c) which appears in § 70.22(g).

Because these amendments relate solely to corrections and minor matters, good cause exists for omitting notice of proposed rule making, and public procedure thereon, as unnecessary, and for making the amendments effective July 25, 1974.

Pursuant to the Atomic Energy Act of 1954, as amended and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 20, 50, and 70, are published as a document subject to codification.

39 FR 34394
Published 9/25/74
Effective 10/25/74

Information Requested by Attorney General for Antitrust; Review of Facility License Applications

On April 25, 1974, the Atomic Energy Commission published in the FEDERAL REGISTER (39 FR 14613) proposed amendments of 10 CFR Part 2, Rules of Practice and 10 CFR Part 50, Licensing of Production and Utilization Facilities, which would provide for early submission to the Commission of copies of information requested by the Attorney General for the conduct of his antitrust review and rendering of advice to the Commission with respect to certain facility license applications.

Under the proposed amendments, applicants for class 103 construction permits would be required to file the required document "Information Requested by the Attorney General for Antitrust Review" at least nine months but not more than thirty-six months prior to the date that any other part of the construction permit application is filed. In addition, under the proposed amendments Question 9 of Appendix L of Part 50 would be amended to require the applicant to provide mailing addresses for non-affiliated listed electric utility systems with peak loads smaller than the applicant's which now serve either at wholesale or retail adjacent to areas served by the applicant.

The early filing of antitrust information was intended to permit the Attorney General and the Commission to complete the antitrust review process, including antitrust hearings where necessary, concurrently with other licensing reviews.

Interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments by May 28, 1974. After consideration of the comments received and other factors involved, the Commission has adopted the proposed amendments with one significant change. Several commentors pointed out that applicants whose applications were filed between the effective date of the amendments and nine months after the effective date would be required to wait nine months after filing antitrust information to file the rest of the application even though the entire application had been prepared. In order to resolve this problem, § 50.33a(b) and (c) have been changed to require nine-months' prior submission of antitrust information only in the case of a construction permit applied for after nine months after the effective date of the amendments. Persons applying for construction permits before that time are required to submit the antitrust information as soon as possible.

It should be noted that Part 50 contains a provision (§ 50.12) that authorizes the Commission to grant exemptions from Part 50 requirements, including § 50.33a, as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments of Title 10 of the Code of Federal Regulations, Chapter I, Parts 2 and 50, are published as a document subject to codification.

40 FR 3210C
Published 1/20/75
Effective 2/19/75

PART 50—LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Quality Assurance Criteria—Permissible Organizational Relationships

On April 19, 1974, the Atomic Energy Commission published in the FEDERAL REGISTER (39 FR 13974) for public comment a proposed amendment to 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." The purpose of the amendment is to clarify the intent of Criterion I, "Organization," with regard to permissible organizational relationships. All interested persons were invited to submit comments or suggestions in connection with the proposed amendment by June 3, 1974.

The proposed amendment was proposed as a result of the questions raised by the decision of the Atomic Safety and Licensing Appeal Board in *Commonwealth Edison Co. (LaSalle County Nuclear Station Units 1 and 2)* ALAB-153, RAI 73-10, 821 (October 19, 1973) and *Consumers Power (Midland)* ALAB-147, RAI 73-9, 636 (September 18, 1973), (reconsideration denied, ALAB-152, RAI 73-10, 816 (October 5, 1973)). These questions concerned the organizational relationships where personnel performing a quality assurance function reported to a field project manager or superintendent who was concerned with only the single project to which he was then assigned and had cost and schedule responsibility for that project.

Appendix B establishes quality assurance requirements for the design, construction, and operation of those structures, systems, and components of nuclear power plants and fuel reprocessing plants that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. The pertinent provisions of Appendix B apply to all activities which affect the safety-related functions of such structures, systems, and components.

The intent of the quality assurance criteria provided in Appendix B to 10 CFR Part 50 is to require that all activities affecting the safety-related functions of nuclear facility structures, systems, and components be accomplished in a systematic and controlled manner so that there is a high degree of assurance that these activities are performed correctly. Appendix B, in addition to requiring that these activities be performed in a systematic and controlled manner such as by requiring that the activities be prescribed and accomplished in accordance with written instructions or procedures, also requires additional assurance of quality to be provided by verification of the correct performance of these activities by means such as checking, reviewing, inspecting, testing, and auditing. Execution of a quality assurance program which complies with Appendix B thus involves both the performers; e.g., designer, welder, power plant operator, and those persons and organizations accomplishing quality as-

surance functions; e.g., design reviewer, inspector, or tester.

One of the matters with which Criterion I deals is the organizational relationship of the persons and organizations which are assigned the quality assurance functions of (1) assuring that the quality assurance program is established and executed and (2) verifying that an activity has been correctly performed. Criterion I now requires that such persons and organizations shall have sufficient authority and organizational freedom to identify quality problems; to initiate, recommend or provide solutions; and to verify implementation of solutions. The intent of these organizational requirements is to assure that those persons and organizations performing quality assurance functions have the required degree of freedom from other organizational responsibilities, such as cost and scheduling, which could conflict with their quality assurance functions.

It was recognized in establishing the organizational requirements in Criterion I that the degree of separation or independence of the persons and organizations performing quality assurance functions can affect their ability to carry out these functions. While it is desirable from one point of view to have persons and organizations performing quality assurance functions completely separated, organizationally, from individuals who have significant responsibility for performance of the work (including but not limited to cost and schedule responsibility), that same separation may in some instances hinder the quality assurance persons and organizations in performing their functions. The greater the independence or separation, for example, the more difficult it may be in some instances to maintain lines of communication in identifying quality problems and initiating corrective action. A number of variables affect the establishment of a quality assurance organization that will be consistent with Criterion I. The variables include, but are not limited to, the size of the organization, its organizational structure, the type of activity being performed, and the location or locations where the work is being performed.

Guidance as to implementation of a quality assurance program that includes the concepts embodied in the amendment set forth below is contained in the following publications: [1]

1. Guidance on Quality Assurance Requirements During Design and Procurement Phase of Nuclear Power Plants, WASH–1283, Revision 1, dated May 24, 1974;

2. Guidance on Quality Assurance Requirements During the Construction Phase of Nuclear Power Plants," WASH–1309, dated May 10, 1974; and

3. Guidance on Quality Assurance Requirements During the Operations Phase of Nuclear Power Plants," WASH–1284, dated October 26, 1973.

The comments on the notice of proposed rule making, in general, supported the concept that the Commission should be flexible in determining acceptability of licensee proposed organizational approaches to quality assurance provided that the licensee explicitly establishes and delineates the functional relationships that are a part of his quality assurance program.

Additionally, comments stated that Criterion I did not clearly state that the execution of the quality assurance program involved both the performers who achieve the quality objectives and the verifiers who assure that the required quality objectives have been attained. As a result of valid criticisms in this regard, Criterion I has been revised to indicate that activities affecting the safety-related functions include both the performing functions and the quality assurance functions. Criterion I has also been revised to include a requirement for establishment and delineation in writing of the authority and duties of those responsible for attaining quality objectives as well as those performing quality assurance functions.

Comments also recommended clarification of the phrases "quality assurance functions" and "directing and managing the quality assurance program." Clarification has been accomplished by defining quality assurance functions as (a) assuring that an appropriate quality assurance program is established and effectively executed, and (b) verifying that activities affecting the safety-related functions have been correctly performed. Since the execution of the quality assurance program involves both the performers and the verifiers, the phrase "directing and managing the quality assurance program," which appears in the last sentence, has been changed to "assuring effective execution of any portion of the quality assurance program."

Comments also recommended clarification of the last sentence of the proposed rule to eliminate the implication that only one individual may be responsible for the quality assurance program at a given location. As a result of this comment, a change has been made to permit the situation where, at a location; e.g., construction site or engineering and procurement building, there may be more than one individual responsible for assuring effective execution of different portions of the program. It should be recognized, however, that overall control must be provided to assure that these different portions of the program are coordinated and consistent with the overall program requirements.

Comments also requested elimination of the phrase "pressures of production" in describing the authority and organizational freedom required for the verification function. Since it was not intended that this phrase be limited to facets of manufacturing or fabrication; e.g., machining or welding, that phrase has been deleted. The revision now states the broader meaning intended; i.e., sufficient independence from cost and scheduling when opposed to safety considerations. In this broader sense, the thought encompasses such activities as design and procurement.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendment to Title 10, Chapter I, Code of Federal Regulations, Part 50, Appendix B, is published as a document subject to codification.

40 FR 8774
Published 3/3/75
Effective 3/3/75

Energy Reorganization Act; Revisions to Chapter 1 to Reflect Organizational and Procedural Changes

See Part 2 Statements of Consideration.

40 FR 19439
Published 5/5/75
Effective 6/4/75

PART 50—LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents

In the matter of Rulemaking Hearing Numerical Guides for design objectives and limiting conditions for operation to meet the criterion "as low as practicable" for radioactive material in light-water-cooled nuclear power reactor effluents; Opinion of the commission, Chapter I, Summary and Statement of considerations.

Background. The Nuclear Regulatory Commission [1] herewith announces its decision in the rulemaking proceeding concerning numerical guides for design objectives and limiting conditions for operation to meet the criterion "as low as practicable" for radioactive material in light-water-cooled nuclear power reactor effluents.

On December 3, 1970, the Atomic Energy Commission published in the FEDERAL REGISTER (35 FR 18385), new §§ 50.34a and 50.36a in Part 50 of its regulations, specifying design and operating requirements for nuclear power reactors to keep levels of radioactivity in effluents "as low as practicable." The amendments provided qualitative guidance, but not numerical criteria, for determining when design objectives and operations meet the specified requirements. The Commission noted in the Statement of Considerations accompanying the amendments the desirability of developing more definitive guidance. The rule we announce today does that, setting forth criteria which, if met, provide one acceptable method of establishing compliance with the "as low as practicable" requirement of §§ 50.34a and 50.36a.

On June 9, 1971, the Atomic Energy Commission published in the FEDERAL REGISTER (36 F.R. 11113) for public comment proposed amendments to 10 CFR Part 50 which would supplement §§ 50.34a and 50.36a with a new Appendix I. The Proposed Appendix provided numerical guides for design objectives and technical specification requirements for limiting conditions for operation for light-water-cooled nuclear power reactors.

[1] These documents are available for inspection at the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C., and copies may be obtained from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22151.

[1] The licensing and related regulatory functions of the Atomic Energy Commission have been transferred to this Commission. Energy Reorganization Act of 1974, section 201(f), 88 Stat. 1243.

A subsequent notice, published on November 30, 1971 (36 FR 2275), announced a public rulemaking hearing on the proposed amendments. The hearing began on January 20, 1972, before a Hearing Board consisting of Algie A. Wells, Esq., Chairman, Dr. John C. Geyer, and Dr. Walter H. Jordan. The primary participants in the rulemaking hearing included the Commission's Regulatory Staff, a consolidated utility group, the Consolidated National Intervenors, General Electric Company, and the State of Minnesota. In addition, 18 persons or organizations, including the Environmental Protection Agency, made limited appearances.

The hearing was suspended in May of 1972 pending preparation of an Environmental Impact Statement concerning the proposed rulemaking in implementation of the National Environmental Policy Act of 1969. A Draft Environmental Statement was forwarded to the Council on Environmental Quality on January 15, 1973, and circulated for comment to interested Federal agencies and members of the public, including the hearing participants. Notice of public availability of the Statement and an invitation for comment were published in the FEDERAL REGISTER. Comments on the Draft Environmental Statement were received, and a Final Environmental Statement was issued on July 26, 1973. In November 1973, the public hearing was resumed for consideration of the Environmental Statement. The evidentiary hearing was concluded on December 6, 1973, concluding statements of position were filed, and the entire record was forwarded to the Commission for decision. The proceeding covered some 25 days of hearings, 4172 pages of hearing transcript, and thousands of pages of prepared written direct testimony and exhibits. Oral arguments were heard by the Atomic Energy Commission on June 6, 1974.

As the record developed during this rulemaking shows, there is a general consensus concerning the need to define "as low as practicable" with numerical criteria. The major issues of controversy involved the feasibility of achieving the proposed numerical criteria and the cost of compliance with and the perceived benefits of the criteria. The Nuclear Regulatory Commission has carefully considered the entire record and the views of those who participated in the rulemaking hearing in reaching the decision announced herein.[1]

It should be emphasized that the Appendix I guides as here adopted by the Commission are not radiation protection standards. The numerical guides of Appendix I which we announce today are a quantitative expression of the meaning of the requirement that radioactive material in effluents released to unrestricted areas from light-water-cooled nuclear power reactors be kept "as low as practicable."[2]

The Commission's radiation protection standards, which are based on recommendations of the Federal Radiation Council (FRC) as approved by the President, are contained in 10 CFR Part 20, "Standards for Protection Against Radiation," and remain unchanged by this Commission decision.[3] As in the case of parallel recommendations of the National Council on Radiation Protection and Measurements (NCRP) and the International Commission on Radiological Protection (ICRP), these FRC standards which have been previously adopted give appropriate consideration to the overall requirements of health protection and the beneficial use of radiation and atomic energy. The Commission believes that the record clearly indicates that any biological effects that might occur at the low levels of these standards have such low probability of occurrence that they would escape detection by present-day methods of observation and measurement.

The Commission fully subscribes to the general principle that, within established radiation protection guides, radiation exposures to the public should be kept "as low as practicable." This precept has been a central one in the field of radiation protection for many years. The term "as low as practicable" is defined in the Commission's regulations (10 CFR 50.34a(a)[4]) to mean "as low as is practicably achievable taking into account the state of technology, and the economics of improvements in relation to the benefits to the public health and safety and in relation to the utilization of atomic energy in the public interest."

We note that during the pendency of this rulemaking the International Commission on Radiological Protection, in ICRP Publication No. 22, has replaced the phrase "as low as practicable" with "as low as is reasonably achievable" in its recommendation on dose limitation. Its recommendation has also been expanded to identify two specific considerations—economic and social—that are to be taken into account in determining a level of exposure that may be considered "as low as is reasonably achievable." Other considerations, such as ethical ones, are not excluded by this wording and may indeed be considered to be included by the adjective "social." The ICRP has clearly stated that the changed terminology does not reflect a change in the objectives of dose limitation, but rather a choice of language which "more closely describes its intentions." See ICRP Publication 22, paragraphs 6, 7, and 20.

We endorse this attempt to make this basic concept of radiation protection more understandable. We are today directing the Commission's Staff to prepare and issue for public comment a proposed rule that substitutes the currently accepted phrasing—"as low as is reasonably achievable"—for the older, less precise terminology in the many places throughout our regulations and regulatory guides where it appears. The numerical values of Appendix I quantifying "as low as practicable", will not, of course, be affected by the forthcoming change in terminology.

The principal changes from the proposed amendments published in the FEDERAL REGISTER on June 9, 1971, are as follows:

1. *Liquid effluents.* The design objectives in the proposed rule for radioactive material in liquid effluents were based on: (a) An annual release of not more than 5 curies, except tritium, from each reactor, (b) specified concentration limits on tritium and other radioactive materials released to the environment, and (c) a provision for increasing or decreasing the design-objective quantities and concentrations for specific sites subject to keeping annual doses to the total body or any organ of an individual in an unrestricted area to not more than 5 millirems for all reactors on a site. The design objective in Appendix I as adopted limits the total radioactivity released from each light-water-cooled nuclear power reactor to a level that limits the annual dose or dose commitment from liquid effluents from that reactor for any individual in an unrestricted area from all pathways of exposure to not more than 3 millirems to the total body and 10 millirems to any organ.

The adopted design-objective guides contain no numerically specified limits upon quantities of radioactive material to be released since the record shows that such limits have little if any independent significance. Protection of future users of the near environs of the reactor is provided by the additional requirement that all augments with a favorable cost-benefit balance be included in the radwaste system and by the provision that the estimation of exposure be made with respect to such potential land and water use and food pathways as could actually exist during the term of plant operation.

2. *Gaseous effluents.* The principal difference in the design objective in the Appendix adopted by the Commission dealing with external dose from radioactive material in gaseous effluents is the separate treatment of total-body dose and skin dose. The proposed design objective limited both the annual total-body and the annual skin dose from all reactors on a site to 5 millirems, whereas the new design objective incorporates an annual total-body dose limit from gaseous effluents of 5 millirems per light-water reactor and increases the annual dose limit to the skin to not more than 15 millirems per light-water reactor. The design-objective annual dose to the skin has been increased from 5 millirems to

[1] Some of the parties to this proceeding sent unsolicited letters to individual members of the Commission, expressing views on the subject matter of this rulemaking. These communications, not a part of the hearing record, have been placed in the public document room and served upon all parties in the manner described in 10 CFR 2.780(b), and have not been considered in reaching the decision announced today.

[2] Under the President's Reorganization Plan No. 3 of 1970, the Environmental Protection Agency (EPA) is responsible for establishing generally applicable environmental radiation standards for the protection of the general environment from radioactive materials. The Nuclear Regulatory Commission is responsible for implementation and enforcement of EPA's generally applicable environmental standards. If the design objectives and operating limits established in this decision should prove to be incompatible with any generally applicable standard hereafter established by EPA, these objectives and limits will be modified as necessary.

[3] The radiation protection guides established by the FRC for individual members of the public are 500 millirems per year to the total body and bone marrow and 1500 millirems per year to the thyroid and bone. The guide for average dose to the population is 5 rems in 30 years to the gonads (an annual average dose of 170 millirems per person averaged over the population). These guides and recommendations apply to exposures from all sources other than medical procedures and natural background.

The FRC provides no specific radiation protection guides with respect to other organs of the body. The ICRP recommends annual dose limits of 500 millirems to the total body, gonads, and red bone marrow; 3000 millirems to the skin, bone, and thyroid, except 1500 millirems to the thyroid of children up to 16 years of age; and 1800 millirems to other single organs.

15 millirems on the basis of evidence in the Final Environmental Statement and the hearing record showing that it is not technically practicable to design and operate a light-water-cooled nuclear power reactor with a limit on the annual skin dose from beta radiation of not more than 5 millirems.* It is noted by way of comparison that an annual dose to the skin of 15 millirems is one-half of one percent of the radiation dose limit for a member of the public recommended by the International Commission on Radiological Protection.

3. *Radioactive iodine and particulate matter.* The proposed design objective for radioactive iodine and radioactive material in particulate form released in gaseous effluents was expressed as a limit on the average concentrations of radioiodines and radioactive material in particulate form at or beyond the site boundary. The proposed concentration values were designed to limit the annual dose to the thyroid or other organs from all reactors on a site to not more than 5 millirems. The design objective in the new Appendix I is expressed as the annual quantity of radioactive iodine and radioactive material released which limits the annual dose or dose commitment to any organ, including the thyroid, of any individual in an unrestricted area from all pathways of exposure to not more than 15 millirems per year per light-water-cooled nuclear power reactor. In determining the annual dose or dose commitment, the applicant or licensee may evaluate the portion due to intake of radioactive material via the food pathways at the locations where the food pathways actually exist. The design-objective annual dose for radioactive iodine has been increased from 5 to 15 millirems on the basis of evidence developed in the hearing which showed that the previous design-objective annual dose of 5 millirems per year for doses to the thyroid from the milk pathway was not practicable.

4. *Cost-benefit requirements.* In addition to the numerical design-objective guides described in paragraphs 1, 2, and 3 above, our decision requires that the applicant include in the radwaste systems all items of reasonably demonstrated technology that, when added to the system sequentially and in order of diminishing cost-benefit return, can with a favorable cost-benefit ratio effect reduction in dose to the population reasonably expected to be within 50 miles of the reactor. The definition of as low as practicable (10 CFR 50.34a(a)) includes consideration of "* * * the economics of improvements in relation to the benefits to the public health and safety * * *." We find support in the record for the application of a cost-benefit analysis as a part of the process for determination of the radwaste systems to be used. Such a cost-benefit analysis requires that both the costs of and the benefits from reduction in dose levels to the population be expressed in commensurate units, and it seems sound that these commensurate units be units of money. Accordingly, to accomplish the cost-benefit balancing, it is necessary that the worth of the decrease of a man-rem and man-thyroid-rem or some essentially equivalent quantities in dose to the population be assigned monetary values.

The record, in our view, does not provide an adequate basis to choose a specific dollar value for the worth of decreasing the population dose by a man-rem or a man-thyroid-rem. Published values for the worth of a man-rem were shown in the record to range from about $10 to $980. No similar values for worth of a man-thyroid-rem are presented. One of the hearing participants chose $1000 per man-rem and $333 per man-thyroid-rem. This choice for worth of a man-rem simply reflected a value slightly more conservative than the highest previously published value and implied no independent assessment of the worth of either entity. We, therefore, recognize that there is no consensus in this record or otherwise regarding proper value for worth of a man-rem and even less information upon which to base the choice of a proper value for worth of a man-thyroid-rem.

Moreover, we also recognize that selection of such values is difficult since it involves, in addition to actuarial considerations that are commonly reduced to financial terms, aesthetic, moral, and human values that are difficult to quantify. At the same time we believe that meaningful cost-benefit balances are an essential part of the considerations of the as low as practicable concept for control of insult to the population from radioactive effluents, and for that matter, from other pollutants.

We propose, therefore, at the earliest practicable date to conduct a rulemaking hearing to establish appropriate monetary values for the worth of reduction of radiation doses to the population. We are aware that the National Academy of Sciences—National Research Council Advisory Committee on Biological Effects of Ionizing Radiation is currently studying and developing methodologies for benefit-risk-cost analysis for activities involving radiation exposure. It is possible that information on monetary values for the worth of reduction of radiation dose, as well as useful methodology, may be provided by this study. When such appropriate values (or some other equivalent quantified, and as yet unspecified, criteria) are available, we shall consider them for incorporation in Appendix I.

Meanwhile, and purely as an interim measure, we believe that we can accept the conservative value of $1,000 per total-body man-rem for these cost-benefit evaluations. Since we realize that the ultimately accepted value may well prove to be less than this, we should leave it open to demonstration in individual cases that a lower figure should be used if the applicant chooses to and can make that demonstration. It is also clear to us that arguments can be made that the worth of reduction in thyroid dosage should have a smaller value than that for a total-body man-rem. Since the record can offer no clear guidance in this regard, we have accepted, purely as an interim measure, $1000 per man-thyroid-rem as the value to be used in the cost-benefit evaluations. This figure is subject to individual case demonstration of a lower value, as indicated above, since terim measure, $1,000 per man-thyroid-cepted value will be lower.

In summary, we have decided that, pending completion of the further rulemaking to establish better values (or suitable equivalent criteria), the cost-benefit balances required by section II, paragraph D of Appendix I, shall be accomplished using the value of $1000 per total-body man-rem and $1000 per man-thyroid-rem, or such lesser values as may be demonstrated by the applicant to be suitable in a particular case.

We intend that radwaste augments necessary to satisfy the limits (of section II, paragraphs A, B, and C of Appendix I) on maximum dosages to individuals will be required in all cases. Additional radwaste augments will be required when, and only when, it can be shown that, where each is added sequentially and in order of diminishing cost-benefit return, the sum of its annualized cost of installation, its annual operating cost, and a reasonable allowance for its maintenance is less than the annual worth of the decreases in total-body man-rem and in man-thyroid-rem which the augment can achieve for the population within 50 miles of the reactor.

5. *Per Site vs. Per Reactor.* From the foregoing it is clear that the Commission's policy is to minimize the radiation exposure of human beings from the effluents of light-water-cooled nuclear power reactors. We have chosen to express the design objectives on a per light-water-cooled nuclear power reactor basis rather than on a site basis, as was originally proposed. While no site limits are being adopted, it is expected that the dose commitment from multi light-water-cooled reactor sites should be less than the product of the number of reactors proposed for a site and the per-reactor design-objective guides because there are economies of scale due to the use of common radwaste systems for multi-reactor sites which are capable of reducing exposures. Moreover, we note that the matter of overall environmental impact of nuclear sites is a topic to be specifically addressed in the energy-center study mandated by the Energy Reorganization Act of 1974.

6. *Licensee and Commission action.* Revisions have been made in the guides for limiting conditions for operation with respect to when appropriate action must be taken to reduce release rates of radioactive material. The proposed action levels provided that, if rates of release of quantities and concentrations in effluents actually experienced over any calendar quarter indicate that annual rates of release were likely to exceed 2 times the design objectives, the licensee should take corrective action. If such annual rates were likely to exceed a range of 4 to 8 times the design objectives, the Commission would take appropriate action to ensure that the release rates were reduced.

The provisions adopted require the licensee to initiate action if the average dose rate offsite during any calendar quarter from materials discharged to the atmosphere exceeds 10 millirems whole body per year or 30 millirems to the skin and any organ per year, or if the average dose rate offsite during any

* The dose rates specified in the rule of 10 millirads per year for gamma radiation and 20 millirads per year for beta radiation are to be based on calculated annual air doses. These calculated annual air doses would normally be considered to meet the objective as limiting doses to individuals in unrestricted areas to not more than 5 millirems to the total body or 15 millirems to the skin. Provisions are made to increase or decrease the annual dose rate if, for a particular site, there are special circumstances where the specified dose rates should be adjusted to limit the exposure of an individual in an unrestricted area to 5 millirems total body exposure or 15 millirems to the skin.

calendar quarter from liquid effluents exceeds 6 millirems whole body per year or 20 millirems to the skin and any organ per year.

Existing Commission regulations (10 CFR 50.36a) have recognized the need for licensees to be permitted flexibility of operation compatible with considerations of health and safety to ensure that the public is provided a dependable source of power even under unusual operating conditions that may temporarily result in releases higher than the numerical guides for design objectives. Some flexibility of operation is believed to be essential and warranted in view of the restrictive nature of the Appendix I guides and the fact that, even with this flexibility, it can be ensured that the average population exposure will still be a small fraction of doses from natural background radiation. The Commission notes, however, that, in using this operational flexibility under temporary or short-term unusual operating conditions, the licensee must continue to exert his best efforts to keep levels of radioactive material in effluents within the numerical guides for design objectives.

In order to provide assurance that releases of radioactive materials are known, the Commission has expanded the surveillance and monitoring program beyond current requirements for licensees to report on the quantities of the principal radionuclides released to unrestricted areas. It is expected that this expanded monitoring program will be used by licensees as a basis for initiating prompt and effective corrective action towards ensuring that the actual offsite exposures per reactor are compatible with the design objectives as adopted.

These guides will continue to provide operating flexibility and at the same time ensure a positive system of control by a graded scale of action first by the licensee and second by the Commission, if the need arises, to reduce the release of radioactive material should the rates of release actually experienced substantially exceed the design objectives.

7. *Implementation.* The proposed Appendix I was silent on the method for implementation of the numerical guides. The Commission believes, however, that Appendix I should guide the Commission Staff and other interested persons in the use of appropriate calculational procedures for applying the numerical guides for design objectives. Consequently, the provision adopted states that compliance with the guides on design objectives shall be demonstrated by calculational procedures based on models and data that will not substantially underestimate the actual exposure of an individual through appropriate pathways, all uncertainties being considered together.

Quantitative measurement of radioactive materials released in effluents from licensed light-water-cooled nuclear power reactors is required by 10 CFR 50.36a. This requirement is made more specific by Appendix I and reflects the desirability of the use of the best available experimental data as well as calculational models in order to achieve increased accuracy and realism. Strong incentives already exist for improving the calculational models used in establishing design objectives in view of the economic penalty associated with needless overdesign for conservatism. Actual measurements and surveillance programs can provide data for improving these models. It is recognized, however, that measurements of environmental exposures and quantities of radioactive materials in the environs are complicated by the very low concentrations that are encountered, compared to background, and by the fact that there are a number of variables in both time and space that affect concentration. Thus, the correlation of the best measurements with the best calculations is tedious and difficult. However, since calculational procedures must be employed in implementing the design-objective guides of Appendix I, the Commission has adopted an implementation policy that encourages the improvement of calculation models and the use of the best data available.

The foregoing "Summary and Statement of Considerations" has briefly summarized the technical context of the issues presented and outlined the changes made in Appendix I from the form in which it was originally proposed. The text of Appendix I as adopted follows in Chapter II of this Opinion. The three following chapters of text set forth the record bases for the changes in greatly expanded detail. These supplemental explanatory chapters (III through V), because of their length, will not be published in the FEDERAL REGISTER with the text of Appendix I and the Summary and Statement of Considerations, but will be published in the April issue of Nuclear Regulatory Commission Issuances.* Single copies of this volume may be purchased at a cost of $4.00 from the USERDA Technical Information Center, P.O. Box 62, Oak Ridge, Tennessee, 37830. Copies of the complete Opinion are also available for inspection and copying in the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. 20555.

Pursuant to the Atomic Energy Act of 1954, as amended, and Sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50, are published as a document subject to codification to be effective on June 4, 1975.

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PART 50—LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Application of Cost-Benefit Analysis Requirements of Appendix I to Certain Nuclear Power Plants

The Nuclear Regulatory Commission has adopted amendments to Appendix I of 10 CFR Part 50. Appendix I sets forth numerical guides for design objectives and limiting conditions for operation to meet the criterion "as low as practicable" for radioactive material in light-water-cooled nuclear power reactor effluents. The amendments provide persons who have filed applications for construction permits for light-water-cooled nuclear power reactors which were docketed on or after January 2, 1971, and prior to June 4, 1976, the option of dispensing with the cost-benefit analysis required by Paragraph II.D of Appendix I if the proposed or installed radwaste systems and equipment satisfy the Guides on Design Objectives for Light-Water-Cooled Nuclear Power Reactors proposed by the regulatory staff in the rulemaking proceeding on Appendix I (Docket–RM–50–2).

Paragraph II.D requires each applicant for a permit to construct a light-water-cooled nuclear power reactor to submit a cost-benefit analysis of additional radwaste systems and equipment that could reduce the radiation dose to the population reasonably expected to be within 50 miles of the reactor. In this cost-benefit analysis, the values $1000 per total body man-rem and $1000 per man-thyroid-rem (or such lesser values as may be demonstrated to be suitable in a particular case) are required to be used. The requirements of Paragraph II.D embody an approach somewhat different from the proposed Appendix I published for comment on June 9, 1971 (36 FR 11113).

After a lengthy Appendix I rulemaking proceeding initiated in 1971 which was conducted by the former Atomic Energy Commission, the Nuclear Regulatory Commission, which was assigned the responsibility of carrying out the licensing and related regulatory functions of the Atomic Energy Commission by the Energy Reorganization Act of 1974 (effective January 19, 1975), adopted on May 5, 1975, a new Appendix I to Part 50 (40 FR 19439).

Appendix I provides numerical guides for design objectives and limiting conditions for operation for light-water-cooled nuclear power reactors to keep radioactivity in effluents as low as practicable. All Commission licensees are required by 10 CFR Part 20 to make every reasonable effort to maintain radiation exposures, and releases of radioactive materials in effluents to unrestricted areas, as far below Part 20 limits as practicable. The definition of "as low as practicable" in both 10 CFR §§ 20.3(c) and 50.34a(a) includes consideration of the economics of improvements in relation to the public health and safety.

Appendix I as adopted by the Commission provides in Section II—in addition to design objectives for annual doses for any individual in an unrestricted area from both liquid and gaseous effluents, including radioactive iodine and radioactive material in particulate form—a further requirement that the applicant include in the radwaste system all items of reasonably demonstrated technology that, when added to the system sequentially and in order of diminishing cost-benefit ratio, effect reductions in dose to the population reasonably expected to be within 50 miles of the reactor. As an interim measure and until establishment and adoption of better values (or other appropriate criteria), the values $1000 per total body man-rem and $1000 per man-thyroid-rem (or such lesser values as may be demonstrated to be suitable in a particular case) are to be used in this cost-benefit analysis. A rulemaking hearing is planned at the earliest practicable date to establish more appropriate monetary values for the worth of reduction of radiation doses to the population.

The design objectives proposed by the

* Copies of the complete five-chapter Opinion of the Commission have been filed with the original document submitted for publication in the FEDERAL REGISTER, and may be examined by members of the public at the Offices of the Federal Register.

staff in the rulemaking proceeding on Appendix I included specifications on the total radioactivity released (5 curie/per year reactor for liquid effluents, excluding tritium and dissolved gases; and 1 curie/per year per reactor of radioiodine-131) and a 5 millirem limitation on the annual whole body dose to individuals at or beyond the site boundary from all pathways of exposure. Because the former criterion used by the staff that each plant meet those design objectives has led to the proposed or actual installation of radwaste systems and equipment that reduce to low levels the total activity in effluent releases or expected effluent releases from such plants, the application of the $1000 per man-rem criterion specified in Paragraph II.D of Appendix I to these or similarly designed plants is unlikely to result in radwaste equipment augmentation.

Cost-benefit analyses by the NRC staff of applications for construction permits for light-water-cooled nuclear power reactors filed and reviewed since 1971 in accordance with those design objectives show that for boiling water reactors, additional radwaste equipment cannot be added for less than $1000/man-rem. Therefore, in general, boiling water reactors that have radwaste systems and equipment that meet those proposed design objectives will meet the requirements of Section II.D of Appendix I. Similar cost-benefit analyses have shown that pressurized water reactors whose radwaste systems have been evaluated and found acceptable under those design objectives also meet the requirements of Section II.D of Appendix I.

Basic assumptions used in these analyses were: (1) Iodine-131 in gaseous releases was the only release considered, since this is the dominant factor in the cost-benefit analyses; (2) boiling water reactor condenser offgas and pressurized water reactor waste gas treatment systems were considered to be augmented in order to meet the individual dose guidelines proposed by the staff in the Appendix I rulemaking proceeding; (3) a release of 1 curie of iodine-131 results in a population exposure of 100 man-thyroid-rem. The assumption that iodine-131 in gaseous releases is the dominant factor is based on the results of staff evaluations, reported in draft and final environmental impact statements, of proposed light-water-cooled nuclear power reactors for which applications for construction permits were docketed since 1971. The total body man-rem associated with noble gas and liquid releases for radwaste systems and equipment found acceptable under the design objectives proposed by the staff were small, i.e., less than 10 man-rem for the annual noble gas releases and less than 5 man-rem for the annual liquid releases in almost all cases. As a consequence, it can reasonably be concluded that reduction of population dose by augmentation of the noble gas and liquid radwaste treatment systems was not likely to be achieved without exceeding the $1000/man-rem criterion.

A. *Boiling Water Reactor Cost-Benefit Analyses.* Sources of radioiodine releases in boiling water reactors are:

1. Reactor building vent.
2. Auxiliary building vent.
3. Radwaste building vent.
4. Turbine building vent.
5. Turbine gland seal condenser exhaust.
6. Main condenser vacuum pump.
7. Condenser air ejector exhaust.

The last source was assumed to be treated such that the iodine-131 release is negligible compared with the other sources.

Additional radwaste equipment considered included: charcoal adsorbers for building ventilation exhaust (Sources 1, 2, 3, 6) and equipment for clean sealing steam for the turbine gland seal exhaust and for sealing valve stems in the steam system (Sources 4, 5). The charcoal adsorbers reduce the iodine-131 release to approximately 10% of the expected release without the filters. The turbine gland seal condenser exhaust releases can be reduced to negligible levels by the use of clean steam. Releases from the turbine building vent can be reduced approximately 80% by using clean steam on valves, 2.5-in. and larger, in the turbine building.

The cost of the additional equipment is greater than the benefit of reduced population exposure (at $1000/man-rem) in all cases. Accordingly, such additional equipment for boiling water reactors would not be justified according to the criterion of Section II.D of Appendix I.

B. *Pressurized Water Reactor Cost-Benefit Analyses.* Sources of iodine-131 releases in pressurized water considered were:

1. Containment.
2. Auxiliary building vent.
3. Turbine building vent.
4. Condenser air ejector exhaust.
5. Blowdown flash tank vent.

Reduction in released activity can be achieved with charcoal adsorbers (Sources 1, 2, 4), with clean sealing steam for valves (Source 3), and by installation of a piped blowdown flash tank vent to the main condenser or feedwater heater (Source 5). As with boiling water reactors, charcoal adsorbers can reduce the activity approximately 90 per cent. Clean sealing steam effects an 80% reduction in releases. The blowdown flash tank vent source can be eliminated by routing the release to the main condenser or feedwater heater.

With respect to the pressurized water reactor containment as a source of effluent release, the estimated cost of charcoal adsorbers was based upon a plant having a low volume purge system in the initial design stage. Charcoal adsorbers cannot be installed in plants which have a high volume purge system for less than $1000/man-rem. Most pressurized water reactors for which license applications have been docketed after January 2, 1971, fall into this latter category. Those which have a low volume purge system are located on sites where the reduction in population exposure is less than 100 man-rem per curie of iodine-131, so that the cost of installation of charcoal adsorbers is greater than $1000/man-rem.

Based on the foregoing, there is no need, on a cost-benefit basis, to apply the requirements of Paragraph II.D of Appendix I of Part 50 to those light-water-cooled nuclear power reactors having radwaste systems and equipment determined to be acceptable under the proposed staff design objectives. Accordingly, Paragraph II.D of Appendix I has been amended to specify that persons who have filed applications for construction permits for light-water-cooled power reactors which were docketed on or after January 2, 1971, and prior to June 4, 1976, need not comply with the cost-benefit requirements of that paragraph if the radwaste systems and equipment described in the preliminary or final safety analysis report and amendments thereto satisfy the design objectives proposed by the staff in the Appendix I rulemaking proceeding.

Because the amendments will result in no appreciable change in the population exposure from the affected plants than would result if the amendments were not promulgated, the Commission has found that notice of proposed rulemaking and public procedure thereon are unnecessary. Since the amendments relieve from restrictions imposed under regulations currently in effect, they may, pursuant to 5 U.S.C. 553, become effective immediately.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 and sections 552 and 553 of Title 5 of the United States Codes, the following amendments to Title 10, Chapter 1, Code of Federal Regulations, Part 50, are published as a document subject to codification.

40 FR 58847
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PART 20—STANDARDS FOR PROTECTION AGAINST RADIATION

PART 50—LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Change of Terminology for "As Low As Practicable" Limits

On May 5, 1975, the Nuclear Regulatory Commission published in the FEDERAL REGISTER its decision in the rule making proceeding concerning numerical guides for design objectives and limiting conditions for operation to meet the criterion "as low as practicable" for radioactive material in light-water-cooled nuclear power reactor effluents, including amendments of 10 CFR Part 50 which became effective June 4, 1975.

In its decision, the Commission noted that during the pendency of the rule making, the International Commission on Radiological Protection, in ICRP Publication No. 22 has replaced the phrase "as low as practicable" with "as low as is reasonably achievable" in its recommendation on dose limitation. The Commission, in its decision, endorsed the attempt to make this basic concept of radiation protection more understandable and directed the staff to prepare and issue for public comment a proposed rule that would substitute the currently accepted phrasing "as low as is reasonably achievable" for the older, less precise terminology where it appears in the

regulations.

In accordance with the Commission's directive the staff prepared proposed amendments of 10 CFR Parts 20 and 50 which would substitute the term "as low as is reasonably achievable" for the term "as low as practicable."

The notice of proposed rule making was published in the FEDERAL REGISTER on August 6, 1975 (40 FR 33029) inviting public comments by October 6, 1975.

Only one comment was received. The commenter expressed the view that some confusion and problems of practical application would result from the words "other societal and socioeconomic considerations" in the proposed amendments of §§ 20.1(c) and 50.34a(a). The commenter indicated that questions would be raised as to whether the quoted words are within the regulatory and statutory public health and safety concepts and whether the words really add anything to the regulations.

It is the Commission's view that the words "other societal and socioeconomic considerations" are consistent with the recommendation on dose limitation of the International Commission on Radiological Protection in ICRP Publication No. 22, serve to clarify the term "as low as is reasonably achievable", and should be included in the amendments.

Notice is hereby given that the proposed amendments are adopted without change and are set forth below.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 20 and 50 set forth below are published as a document subject to codification.

41 FR 6256
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Effective 3/15/76

PART 50—LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Codes and Standards for Nuclear Power Plants and Technical Information

On September 30, 1974, the Atomic Energy Commission published in the FEDERAL REGISTER (39 FR 35180) proposed amendments to its regulations, 10 CFR Part 50, "Licensing of Production and Utilization Facilities," which would modify the basis for establishing which revisions of referenced codes and standards should be applied to the construction and operation of certain components of water-cooled nuclear power plants. Also the proposed amendments would incorporate by reference new addenda to the referenced codes and standards, delete obsolete references, correct typographical errors and make minor changes to Appendix G of Part 50. Interested persons were invited to submit written comments for consideration in connection with the proposed amendments by October 30, 1974.

On October 11, 1974 the Energy Reorganization Act of 1974[1] was enacted into law. This Act provided for the abolition of the Atomic Energy Commission. Section 201 of this Act provided for the establishment of a Nuclear Regulatory Commission and a transfer to this new Commission of all the licensing and related regulatory functions of the Atomic Energy Commission. In addition, section 301 of the Act provided that any proceedings pending before the AEC at the time of its abolition shall, to the extent that such proceedings relate to functions transferred by the Act, be continued.

Upon consideration of the comments received and other factors involved, the Nuclear Regulatory Commission has adopted the proposed amendments with certain modifications in the form set forth below. These amendments have been changed substantially in §50.55a(g), "Inservice Inspection Requirements", to provide consistency in design requirements and to minimize interference with the established equipment procurement practices and inservice examination practices of the nuclear power industry. Some of the more significant changes to § 50.55a(g) from the proposed rule are:

a. The effective rule requires that an operating license for a utilization facility be subject to the conditions specified in § 50.55a(g), "Inservice Inspection Requirements."

b. To eliminate the misconception that the design of components needs to be continually modified and to provide a consistency between the design requirements for inspectability and the design requirements for construction, the provision on design requirements for inspectability of components has been changed to refer to the same code edition which is applied to the construction of such components.

c. The rule specifies inservice inspection requirements which apply to utilization facilities whose construction permits were issued prior to January 1, 1971.

d. Provisions in the rule for continued updating of requirements for inservice inspection to achieve compliance with more recent editions of the referenced code have been simplified and permit examination and testing programs to be updated at intervals of 40- and 20-months, respectively.

e. The rule specifies actions to be taken by a licensee when a revised inservice inspection program for a facility conflicts with the technical specifications or when a requirement of a subsequent edition of the referenced code is deemed impractical by the licensee and is not included in the inservice inspection program.

f. A provision has been added to the rule that the Commission may either (1) exempt the licensee from certain requirements determined to be inequitable and for which compliance may result in an undue burden without providing a significant increase in safety or (2) require the licensee to follow an augmented program when the Commission deems that additional assurance of structural reliability is necessary.

The Commission believes these changes adopted will facilitate the orderly application of new inservice inspection requirements in Section XI of the ASME Code which are incorporated by reference to operating nuclear power plants without causing significant modifications to the plant or an intolerable impact on the inservice inspection program. Also the Commission believes these changes adopted will provide an equivalent increase in the protection of the health and safety of the public to that which would be provided by the proposed rule.

The amendments to § 50.55a set forth below which the Commission has adopted include the following:

a. References to published codes and addenda whose requirements must be met were changed to include Addenda through the Winter 1973 Addenda.

b. For a utilization facility for which a construction permit is issued on or after July 1, 1974 the rule requires that the determination of which code revision applies to a component be based on the docket date of the application for a construction permit rather than the date of issuance of the construction permit. This change should permit a more accurate assessment by the applicant of the code edition and addenda that will be in effect at the time components are ordered and thereby facilitate his procurement of long lead time components which are ordered well in advance of the construction permit date.

c. The rule modifies inservice inspection requirements applicable to components of nuclear power plants throughout the service life of the facility. Examination and testing requirements that become effective in new editions and addenda of Section XI of the ASME Code and are incorporated by reference in § 50.55a would become applicable to all operating plants to the degree practical. The Commission will review such code changes with respect to impact on the existing operating facilities prior to incorporating by reference any new editions and addenda of Section XI.

The amendments to Appendix G conform the referenced edition and addenda of the ASME Code in that Appendix to those specified by § 50.55a(b), including the periodic amendments and also clarify the upper-shelf energy requirements for beltline materials.

Other amendments delete references to obsolete documents and correct typographical errors.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, and Sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50 are published as a document subject to codification.

[1] Pub. L. 93-438 (88 Stat. 1233).

41 FR 15832
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CONSTRUCTION PERMIT OR OPERATING LICENSE

Initial Treatment of Application

On September 25, 1974, the Atomic Energy Commission published in the FEDERAL REGISTER (39 FR 34423) proposed amendments of 10 CFR Parts 2, 50, and 51 which were procedural changes pertaining to the initial treatment of an application for a construction permit or facility operating license. Under the proposed procedure a tendered application would be initially reviewed by the staff for completeness. If the application is determined to be complete and acceptable for processing the applicant would be so informed and requested to (a) submit additional copies of the application and environmental report and (b) make direct distribution of additional copies of the documents to Federal, state and local officials.

In accordance with the Energy Reorganization Act of 1974, Pub. L. 93–438, the Nuclear Regulatory Commission which was established January 19, 1975, assumed the licensing and related regulatory functions of the former Atomic Energy Commission.

After consideration of the comments received and other factors involved, the Nuclear Regulatory Commission has adopted the proposed amendments. The text of the rule set forth below is the same as the text of the proposed rule except for the following:

(a) Proposed § 2.101(a)(3)(iii) would have required the applicant to make direct distribution of additional copies of the application and environmental report to Federal and State officials, and other interested persons in accordance with written instructions furnished to the applicant by the staff. A sentence has been added to § 2.101(a)(3)(iii) that "Such written instructions will be furnished as soon as practicable after all or any part of the application, or environmental report, is tendered".

(b) Paragraph 2.101(a)(3)(iii) would have required that the copies of the application and environmental report submitted to the staff and distributed by the applicant be completely assembled documents, identified by docket number. Language has been added that "Subsequently distributed amendments to applications, however, may include revised pages to previous submittals and, in such cases, the recipients will be responsible for inserting the revised pages".

(c) A sentence has been added also to § 2.101(a)(4) that "Distribution of the additional copies shall be deemed to be complete as of the time the copies are deposited in the mail or with a carrier prepaid for delivery to the designated addressees".

(d) Changes to § 2.101(a)(5) have been made to conform with the amendments of § 2.101(a) published on September 25, 1974 (39 FR 34394) to allow applicants to submit the information required by Part 50 in three parts.

(e) Paragraph 50.30(c)(1)(i) has been changed to specify that 30 copies of the safety analysis report and 10 copies of the general information shall be retained by the applicant for direct distribution, or submitted upon request, in accordance with instructions by the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate. The proposed rule did not indicate the number of copies to be retained for this purpose. Additional copies may be required for applications having a unique design or with unusual or multiple sites.

(f) Section 51.40 currently requires that applicants covered by § 51.5(a) submit a total of 200 copies of the environmental report. This number has been reduced to a total of 150 copies. Paragraph 51.40(b) requires that applicants for a license to construct and operate a production or utilization facility (including amendments to such applications) shall submit 41 copies of the environmental report and retain an additional 109 copies to be submitted upon request or distributed in accordance with written instructions issued by the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate. The number of copies of the environmental report to be submitted with a petition for rule making has been reduced from 80 to 50 copies. Conforming amendments have been made to §§ 51.20(f) and 51.21.

One commenter noted the significant cost, handling, and storage problems involved when dealing with page copy of safety analysis reports and environmental reports, and suggested that the Commission change its requirements to permit most of the required copies of reports to be submitted in microform. The staff has underway a study to determine the feasibility of adopting a computerized automatic retrieval system using microform, and this suggestion will be considered in the conduct of that study.

Noting that § 2.101(a)(5) provided that docketing can be accomplished if one part of the application is complete, a commenter questioned whether the procedure for direct distribution would apply where one part of the application would be complete. It is the intent of the rule that the provision for direct distribution apply to each part of the application which is complete.

It was also suggested that copies be made available on a purchase basis to the interested individuals concerned. The copies to be distributed in accordance with instructions by the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards are limited to Federal, State, and local officials and the public through the Technical Information Center, and it would not be appropriate to charge for such copies.

A number of commenters objected to the revised procedure as an unwarranted shift of the administrative support function from the staff to the applicant.

The revised procedure would result in some savings to the Commission and some additional costs to the applicants. Aside from these considerations, it is the Commission's view that the revised procedure is a step in the right direction of removing the NRC from the business of serving as a distribution center for applicants' documents. Further, the revised procedure is more efficient than the present procedure since the majority of copies of applications and amendments received by the NRC are repackaged and distributed outside the NRC. Direct distribution by the applicant of the additional copies of the application and environmental report would result in recipients outside the NRC receiving the documents from 8 to 10 days earlier than under the present procedure.

One commenter expressed the view that a tendered application should be formally docketed at the time the staff determines it is complete and acceptable. The Commission considers, however, that the application should not be formally docketed until the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate, has received the required copies of the application and environmental report since a full review of these documents by the technical staff cannot begin until the required number of copies are received.

The amendments set forth below amend Parts 2 and 50 with respect to the initial treatment of an application for a construction permit, or operating license, for a production or utilization facility, or an application for amendment of a construction permit or operating license. If it is determined that the tendered application, including any environmental report required by Part 51 of the Commission's regulations, is complete and acceptable for processing, the applicant will be informed of this determination and requested to (a) submit to the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate, additional copies of the application and environmental report and (b) make direct distribution of additional copies of the documents to Federal, State, and local officials in accordance with requirements of the Commission's regulations and written instructions furnished by the staff.

The application and environmental report will be formally docketed upon receipt by the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards of the required copies of the application and environmental report. Within ten (10) days after docketing the applicant must provide an affidavit that distribution of the additional copies to Federal, State and local officials has been completed in accordance with regulatory requirements and instructions by the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards. Distribution of the additional copies of the application and environmental report shall be deemed to be complete as of the time the copies are deposited in the mail or with a carrier prepaid for delivery to the designated addressees.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, and sections 552 and 553 of Title 5 of the United States Code, as amended, the following amendments of Title 10, Chapter I, Code of Federal Regulations, Parts 2, 50, and 51 are published as a document subject to codification.

41 FR 16445
Published 4/19/76
Effective 4/19/76

Miscellaneous Changes to Chapter

See Part 20 Statements of Consideration.

41 FR 18300
Published 5/3/76
Effective 6/2/76

Preservation of Records

See Part 20 Statements of Consideration.

41 FR 23931
Published 6/14/76
Effective 6/14/76

PART 50—LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Codes and Standards for Nuclear Power Plants

On February 12, 1976, the Nuclear Regulatory Commission published in the FEDERAL REGISTER (41 FR 6256) amendments of the Commission's regulation 10 CFR Part 50, which, among other changes, modify the inservice inspection requirements applicable to components and systems of nuclear power reactors through the service life of the facility.

The prefatory language of § 50.55a published on February 12, 1976 states that "each operating license for a utilization facility shall be subject to the conditions in paragraph (g) * * *." The code incorporated by reference in paragraph (g) applies solely to boiling and pressurized water-cooled nuclear power facilities. It appears that use of the overly broad term "utilization facility" in the prefatory language can be construed to apply the ASME Code to facilities not presently covered by it. It was not intended that § 50.55a expand the applicability of section XI of the ASME Code to facilities other than those power reactors to which this Code applies.

Accordingly, the Commission is issuing clarifying amendments to the prefatory language of § 50.55a and to § 50.55a (g) to clarify this intent.

Inasmuch as the amendments set forth below are of a minor nature, good cause exists for omitting notice of proposed rule making, and public procedure thereon, as unnecessary, and for making the amendments effective June 14, 1976.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50 are published as a document subject to codification.

41 FR 31521
Published 7/29/76
Effective 7/29/76

PART 50—LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Number of Copies of Amendments to Safety Analysis Report

Section 50.30(c)(1)(i) of 10 CFR Part 50 provides that each application for a license to construct and operate a production or utilization facility (including amendments to such applications) should include three signed originals and a specified number of copies. With respect to copies of the safety analysis report, § 50.30(c)(1)(i) requires that 40 copies be submitted to the NRC staff and 30 copies be retained by the applicant for distribution in accordance with the written instructions of the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate.

An initial submission of 40 copies of the safety analysis report is adequate for staff review since it is practicable to break a set of each safety analysis report into sections so that more than one staff member may work concurrently with a single SAR. It is not feasible, however, in most instances to divide an amendment to the SAR so that it may be reviewed concurrently by more than one staff member. In many instances, the staff must reproduce additional copies of the amendments.

Accordingly, the Commission is increasing the number of copies of amendments to the safety analysis report which must be submitted to the staff from 40 to 60 copies. This increase in the number of copies to be submitted will materially contribute to the expeditious review of the amendments to the SAR.

Because this amendment relates solely to minor procedural matters, notice of proposed rule making and public procedure thereon are unnecessary and good cause exists to make the amendment effective on July 27, 1976.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to Title 10, Code of Federal Regulations, Part 50 is published as a document subject to codification.

42 FR 20138
Published 4/18/77
Effective 4/18/77

Corrective and Minor Amendments to Chapter

See Part 0 Statements of Consideration.

42 FR 22882
Published 5/5/77
Effective 6/6/77

PART 2—RULES OF PRACTICE

PART 50—LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Early Site Reviews and Limited Work Authorizations

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final Rule.

SUMMARY: The rule which follows establishes procedures for the early review of site suitability issues both separate from and in conjunction with the initiation of proceedings for the issuance of permits authorizing the construction of nuclear power and test reactors. These procedures would permit an applicant for a construction permit to obtain resolution of important site-related issues which may prove dispositive of an application to construct a facility at a particular site well in advance of any substantial commitment of resources. By permitting early review and providing a measure of certainty in this important area, these procedures are expected to increase the effectiveness of the licensing process in resolving legitimate public concerns and to enhance the effectiveness of the nuclear facility planning process.

EFFECTIVE DATE: June 6, 1977.

FOR FURTHER INFORMATION CONTACT:

Mr. Martin G. Malsch, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, phone 301–492–7203 and Mr. Malcolm L. Ernst, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, phone 301–492–8016.

SUPPLEMENTARY INFORMATION:

BACKGROUND

On April 22, 1976, the U.S. Nuclear Regulatory Commission published in the FEDERAL REGISTER (41 FR 16835–16839) for public comment proposed amendments to its regulations in 10 CFR Parts 2 and 50 which would provide procedures designed to encourage and facilitate early consideration of site suitability issues associated with nuclear power reactors and other large utilization and production facilities and would extend the so-called "limited work authorization" concept to include production facilities such as commercial isotopic enrichment plants, fuel reprocessing plants and test-

ing reactors. Interested persons were invited to submit written comments for consideration in connection with the proposed amendments by July 15, 1976 (41 FR 27805, July 1, 1976). Upon consideration of the comments received and other factors involved, the Commission has adopted the proposed amendments with certain modifications as set forth below.

CHANGES FROM THE PROPOSED RULE

The effective rules follow the basic approach suggested in the proposed regulations and establish procedures for the early review of issues of site suitability both separate from and in conjunction with the initiation of proceedings for the issuance of permits authorizing the construction of certain utilization facilities. These procedures are in accord with the Commission's present statutory authority. They permit any person, including States and other entities, to request a review of site suitability issues, but do not provide for issuance of a partial decision by an atomic safety and licensing board on those issues unless the request for review was made in the context of a construction permit proceeding initiated by a person proposing to construct a nuclear facility. The significant changes from the proposed rule are:

(1) The facilities covered by the effective rule include utilization facilities for which an environmental impact statement must be prepared prior to issuance of a construction permit and which are of the type specified in 10 CFR § 50.21(b)(2) or (3) or 50.22 (nuclear power reactors) or are testing facilities. After consideration, the Commission decided not to extend the effective rule on early review of site suitability issues or extend the limited work authorization concept to production facilities such as nuclear fuel reprocessing plants or other facilities of the type specified in § 50.21 because this would be premature and unnecessary.

(2) The proposed rule has been modified to provide that an early partial decision on site suitability issues may only be reopened based on significant new information. The provision in the proposed rule that such an early decision could also be reopened for "good cause" has been deleted as duplicative and unnecessary.

(3) To eliminate needless argument on such matters as the content of a "full" site approval and the relation between site and design issues, the effective rule eliminates the references to and attempts to distinguish between full and partial site approvals in the proposed rule. Related to this, the final sentence in § 2.604(b) of the proposed rule which would have provided that a partial decision on all site suitability issues shall serve as the decision on general site suitability issues required by § 50.10(e)(2)(ii) has been deleted. Whether an early partial decision would serve as the decision on general site suitability issues would depend on the nature and scope of the decision and would be decided during the limited work authorization review and decision process.

(4) The provisions in paragraph 4 of Appendix Q of the proposed rule relating to the binding effect of staff site approvals on later staff reviews have been revised to more clearly reflect the intent of the proposed rule that the staff's testimony on site suitability issues before an Atomic Safety and Licensing Board need not coincide with a previous review under Appendix Q where there is good reason for the difference in light of the provisions that the staff review under Appendix Q does not in any way limit the authority of the Atomic Safety and Licensing Board, Atomic Safety and Licensing Appeal Board, or the Commission.

(5) In order to provide added assurance that early reviews of site suitability issues will yield useful results proportionate to the resources that must be expended in the review, the proposed rule has been revised (§ 2.605 and paragraph 7. of Appendix Q) to include several additional grounds on which the Commission, upon its own initiative or on motion of a party, may decide not to initiate an early review. These criteria reflect the present Commission practice regarding initiation of separate hearings on site suitability issues (See Potomac Electric Power Company (Douglas Point Nuclear Generating Station, Units 1 and 2) ALAB-277, 1 NRC 539 at 547 (1975)). The criteria include such public interest considerations as the degree of likelihood that early findings on site suitability issues will retain their validity in later reviews and the possible effect on the public interest and interested parties of early, but not necessarily conclusive, resolution of site suitability issues. In addition, the criterion in the proposed rule designed to avoid prejudicing later NEPA reviews has been retained, and a new criterion has been added to accommodate possible objections to the early review of site suitability issues by cognizant state or local government agencies in particular cases. Finally, the effective rule provides that only one review of site suitability issues could be conducted prior to the full NEPA construction permit review.

(6) A provision has been added for soliciting the views of NEPA commenting agencies on the initiation of an early review of site suitability issues.

(7) Other minor or clarifying changes were made to:

Define more exactly the period of time during which a partial decision on site suitability matters is effective;

Provide more specific guidance concerning the time for filing and content of the respective parts of a construction permit application;

Obtain information concerning alternative sites, the applicant's site selection process and the applicant's plans for ultimate development of the site;

Clarify that no limited work authorization or construction permit can be issued without completion of the full NEPA review.

These changes are described more fully below in the detailed explanation of the effective rules.

EXPLANATION OF THE EFFECTIVE RULES

Under the amendments to 10 CFR Part 2, applicants for construction permits may request early review, hearing and partial decision on specific site suitability issues as much as five years in advance of the submittal of the remaining portions of their construction permit applications. The effective regulations contain a schedule which specifies when the several parts of a construction permit application are to be filed and the procedures governing acceptance review and formal docketing of these submittals. Absent a finding by the Commission, the Atomic Safety and Licensing Appeal Board, or the Atomic Safety and Licensing Board that there exists significant new information that substantially affects the conclusions of the partial decision on site suitability issues and necessitates reopening the hearing record, the regulations provide that a partial decision on site suitability issues shall remain in effect either for a period of five years or, where the applicant has made timely submittal of the remainder of his application, until the conclusion of the pending construction permit proceeding. The effective rule provides that the Commission may, upon good cause shown, extend the five year period during which a partial decision shall remain in effect for an additional reasonable period of time, not to exceed one year. The effective rule also provides that any partial decision on a site suitability issue or issues shall be incorporated in the decision regarding issuance of a construction permit to the extent that it serves as a basis for the decision on a specific site suitability issue or issues.

Within the last year or so, a number of utilities have found it necessary, for various economic and financial reasons, to cancel or postpone plans for the construction of nuclear power plants. It is the Commission's intent that the procedures for early review, hearing and partial decision of site suitability issues provided in these regulations for construction permit applicants shall be available to all qualified construction permit applicants, including applicants who did not request early review of site suitability issues at the time of their initial application but who later decide, following postponement of the target date for actual construction of the facility, that this procedure would be advantageous. All such requests must be accompanied by the information prescribed in the effective rule, and will be subject to the same acceptance review. The requirements in the effective rule for filing the remaining parts of the construction permit application must also be followed.

Persons who do not seek a permit to construct a facility may use the procedures in new Appendix Q to 10 CFR Part 50. Under these procedures, interested persons, including States, may request a Commission staff review of site suitability issues at any time. This review, which does not involve a public hearing, culminates in the issuance of a staff site report which identifies the location of the site, states the site suitability issues reviewed, explains the nature and scope of the review and states the conclusions of the staff regarding the issues reviewed and the reasons for those conclusions. The procedures in

Appendix Q require the Commission staff to publish a notice of availability of its report in the FEDERAL REGISTER and to place copies of the report in the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C., and in local public document rooms located near the site identified in the report. The Commission staff is also required to send a copy of the report to the Governor or other appropriate official of the State in which the site is located, and to the chief executive of the municipality in which the site is located, or if the site is not located in a municipality, to the chief executive of the county.

Although Appendix Q explicitly states that issuance of a staff site report does not constitute a commitment on the part of the Commission to issue a permit or a license or to permit site work to go forward pursuant to a limited work authorization (10 CFR § 50.10(e)) and does not affect in any way the authority of the Commission, appeal board, or licensing boards in any proceedings conducted pursuant to 10 CFR Part 2, Subparts F[1] and G, Appendix Q permits applicants for construction permits to reference previously issued Staff Site Reports in their applications. Consistent with Subpart F, the staff would reexamine the conclusions of its early review of site suitability issues, contained in the Staff Site Report, under Appendix Q after five years. Before that time, the conclusions of the Report would only be reexamined if there were good reason for doing so.

The regulations contain certain requirements which the Commission considers essential in order to assure that the procedures for early review of site suitability issues contribute effectively to and are meaningfully integrated into the licensing process. These requirements provide mechanisms which should enable the Commission (1) to reach a viable accommodation between the need to make licensing decisions on the most up-to-date information available and the need to curtail repetitive consideration of previously decided issues, (2) to avoid prejudicing the conclusions of any later review of NEPA (National Environmental Policy Act of 1969) issues regarding alternative siting, (3) to assure that early review of site suitability issues will yield results proportionate to the resources that must be expended in the review, and will not undermine the ability of interested citizens groups and other persons to participate effectively in the site review process, and (4) to consider the views of cognizant state and local agencies with regulatory authority over the proposed site and plant.

These requirements, which are applicable to all requests for early review of site suitability issues, whether submitted by applicants for construction permits or others, prescribe the kind of information which must be supplied in order for the Commission to consider a request for early review of site suitability issues, and specify criteria on which the Commission may base its refusal to perform such a review.

For example, applicants for construction permits who seek early review of site suitability issues are required by § 2.101(a–1)(1) to submit proposed findings, together with a supporting statement, on the issues of site suitability submitted for review, and to provide information on a range of postulated facility design and operation parameters sufficient to enable the Commission to perform the requested review. Applicants for construction permits are also required by §§ 2.101(a–1)(1) and 2.603 (b)(1) to submit descriptions of their site selection process which explain the extent to which that process involves the consideration of alternative sites and the relationship between that process and the application for early review of site suitability issues. Applicants are also required to provide a brief description of their long-range plans for ultimate development of the site. Section 2.605 of the regulations provides that the Commission, on its own intiative or on motion of any party to the proceeding, may decline to initiate an early hearing or render an early partial decision on any issue or issues of site suitability in connection with a construction permit application in cases where no partial decision on the relative merits under Part 51 of the proposed site and alternative sites is requested, upon determination that there is a reasonable likelihood that further review would identify one or more preferable alternative sites and the partial decision on one or more site suitability issues would lead to an irreversible and irretrievable commitment of resources prior to the submittal of the remainder of the required information that would prejudice the later review and decision on such alternative sites. By requiring applicants to furnish information concerning their site selection process as part of their request for early review and by providing for the findings described above, the Commission expects to avoid significant premature commitments of resources to sites which may prove unacceptable when compared with alternative sites.

Section 2.605 of the regulations also provides that the Commission may decline to initiate an early review or render an early partial decision in cases where an early partial decision on any issue or issues of site suitability would not be in the public interest considering (a) the degree of likelihood that any early findings on those issues would retain their validity in later reviews, (b) the objections, if any, of cognizant state or local government agencies to the conduct of an early review on those issues, and (c) the possible effect on the public interest and the parties of having an early, if not necessarily conclusive, resolution of those issues. In this regard, the views of appropriate Federal, State, and local agencies would be considered in connection with the initiation of any early site review. Finally only one review of site suitability issues (either under Subpart F of 10 CFR Part 2 or Appendix Q to 10 CFR Part 50) could be conducted with regard to a particular site prior to the full NEPA construction permit review.

The Commission staff will follow criteria similar to those in § 2.605 in deciding whether to prepare and issue a Staff Site Report in response to a request submitted pursuant to Appendix Q.

Many of the comments favoring adoption of the rule considered its capacity to yield final dispositive decisions crucial to its success. Several commentors suggested that approved sites be "grandfathered" to insulate them from new regulatory requirements imposed during the period the approval is effective. The Commission recognizes the importance of finality in its decisions and has endeavored to assure this in substantial measure by providing that partial decisions on site suitability issues will remain effective for five years or until the conclusion of the construction permit proceeding, by specifying criteria for reopening site suitability decisions, and by providing that partial decisions and Staff Site Reports be as detailed and explicit as possible. The stature of a partial decision on site suitability issues is emphasized in the effective rule by providing that the partial decision shall be incorporated in the decision regarding issuance of a construction permit to the extent that the partial decision serves as the basis for deciding a specific site suitability issue or issues.

Moreover, at the same time, the Commission also recognizes the need to assure that up-to-date information of significance in both the health and safety and the environmental areas is appropriately factored into the Commission's licensing decisions. Consequently, the effective rule does not automatically immunize previously reviewed sites from new regulatory requirements. Whether later adopted regulatory requirements will be imposed on a previously reviewed site (i.e., constitute significant new information that substantially affects the prior conclusions) will be decided based on the content of the new requirements.

Several commentors suggested the adoption of more stringent standards for reopening decisions, such as, for example, the showing of a need to provide substantial additional protection for the public health and safety or the common defense and security, the finding required in 10 CFR § 50.109 to justify backfitting requirements. The Commission believes that the standard enunciated in the proposed rule and largely retained in the effective rule will prove effective both in bringing significant new information to the attention of the Commission and in preserving, to the fullest extent possible, the advantages, from the standpoint of certainty, which are expected to result from early review, hearing and partial decision on site suitability issues.

The effective rule eliminates references to and attempts to distinguish between full and partial site approvals to eliminate needless argument regarding the content of a "full" site approval and the relation between site and design

[1] Subpart F provides for early review of site suitability issues in connection with construction permit applications.

issues. Any effective partial decision on one or more site suitability issues could still serve as the finding of general site suitability called for by 10 CFR 50.10 (e) (2) (ii) depending on the nature and scope of the decision. While the effective rule would allow completion of all or part of the National Environmental Policy Act of 1969 (NEPA) environmental impact statement at an earlier point in time than would be the case if no early site review were conducted, in no case could a limited work authorization or construction permit be granted without a full NEPA environmental impact statement. The rule does not permit any "gaps" in the environmental impact statement.

It is anticipated that environmental concerns will play an important role in the consideration and resolution of site suitability issues. Applicants for construction permits who request early review of environmental site suitability issues will be expected to furnish information concerning the issues addressed, and the Commission staff will conduct its own assessment and review following procedures that are consistent with the review procedures prescribed in NEPA for environmental impact statements. The effective regulation permits a similar procedure to be followed in connection with an Appendix Q review. Since the scope of the NEPA review will depend in any given instance on the nature and scope of the site suitability issues submitted for review, the effective rule does not delineate general requirements for environmental review. The Commission expects that the details of this review will be handled on a case-by-case basis. With respect to its responsibilities under the National Historic Preservation Act of 1966, as amended (16 U.S.C.A. 470 et seq.) and the Archaeological and Historic Preservation Act of 1974 (Pub. L. 93-291, 16 U.S.C.A. 469-469c), the Commission expects that any concerns relating to the preservation of historical, archaeological, architectural or cultural resources which may arise during early review of site suitability issues will be handled in a similar manner.

One of the comments suggested that the rule explicitly provide for joint hearings and increased coordination with the states. The Commission believes that duplicative environmental assessments should be avoided to the extent practicable and that the coordination of federal and state facility siting and environmental reviews should be encouraged.

At the same time, the Commission is of the opinion that, at least in the immediate future, this objective can best be achieved on a case-by-case basis. Accordingly, no specific provisions respecting joint hearings have been included in the effective rule.

The proposed rule would have amended 10 CFR 50.10(e) to extend the Commission's authority to issue limited work authorizations to applicants seeking permits to construct production facilities such as commercial isotopic enrichment plants and reprocessing plants, and testing reactors. After further consideration of this matter, this provision has been eliminated in the effective rule as premature and unnecessary.

In order to provide additional guidance to persons who seek early review of site suitability issues in accordance with the provisions of the effective rule, the Commission staff is simultaneously issuing a report entitled "Early Site Reviews for Nuclear Power Facilities" (NUREG-0180) which describes procedures to be followed by construction permit applicants and others and delineates the nature and scope of some of the more significant areas of technical review. Copies of NUREG-0180 are available for inspection by the public at the NRC's Public Document Room at 1717 H Street, NW., Washington, D.C., and at the NRC's Local Public Document Rooms. Copies of NUREG-0180 may also be purchased from The National Technical Information Service, Springfield, Virginia 22161.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and Sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 2 and 50 are published as a document subject to codification.

42 FR 43385
Published 8/29/77
Effective 8/29/77

Revocation or Modification of Certain Reporting Requirements

See Part 140 Statements of Consideration.

43 FR 6915
Published 2/17/78
Effective 5/3/78

Export and Import of Nuclear Facilities and Materials

See Part 110 Statements of Considerations.

43 FR 11962
Published 3/23/78
Effective 6/6/78

Licensee Safeguards Contingency Plans

See Part 73 Statements of Consideration.

43 FR 18538
Published 5/1/78
Effective 5/1/78

PART 50—LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Minor and Clarifying Amendments

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission's "Licensing of Production and Utilization Facilities" is hereby amended. The amendments make changes relating to the service of copies of an updated application for a license to construct a production or utilization facility so as to reflect the current practice regarding the NRC officers who are to receive copies of such updated applications. The amendments also provide clarifying language as to when the application should by updated, and substitute clarifying language regarding the service of copies of any subsequent amendments to the application.

EFFECTIVE DATE: May 1, 1978.

FOR FURTHER INFORMATION CONTACT:

Royal J. Voegeli, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone 301-492-7437.

SUPPLEMENTARY INFORMATION: 10 CFR 50.30(c)(2) presently provides that an applicant for a license to construct a production or utilization facility who has updated its application shall, upon notification of the appointment of an atomic safety and licensing board to conduct the public hearing required by the Atomic Energy Act for the issuance of a construction permit, serve copies of such updated application on each atomic safety and licensing board member and alternate, the Chairman of the Atomic Safety and Licensing Board Panel, the Office of the Secretary, and the Director of Nuclear Reactor Regulation or the director of Nuclear Material Safety and Safeguards. The current NRC practice is to not require serving copies on the Office of the Secretary, the Chairman of the Atomic Safety and Licensing Board Panel, the Director of Nuclear Reactor Regulation or the Director of Nuclear Material Safety and Safeguards. Applicants are, however, requested to serve a copy on the Atomic Safety and Licensing Appeal Panel. In order to reflect the current practice, the present amendments delete the language designating the NRC officers who are to be served copies of the updated application, and provide instead that copies shall be served as directed by the atomic safety and licensing board appointed to conduct the public hearing on the application. In addition, the amendments provide that the applicant shall serve a copy on the Atomic Safety and Licensing Appeal Panel, and that at the time the application is offered into evidence at the public hearing on the application, the applicant shall provide sufficient updated copies so that one may be served by the Office of the Secretary upon the Atomic Safety and Licensing Appeal Panel. The amendments also provide clarifying language as to when the application is to be updated by providing that the applicant shall

update its application when notified to do so by the atomic safety and licensing board appointed to conduct the public hearing on the application. The amendments also substitute clarifying language regarding the service of copies of any subsequent amendments to the application.

Because these amendments relate solely to minor matters, it has been found that good cause exists for omitting notice of proposed rule making, and public procedure thereon, as unnecessary, and for making the amendments effective upon publication in the FEDERAL REGISTER (May 1, 1978).

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50 are published as a document subject to codification.

43 FR 34784
Published 8/7/78
Effective 9/6/78

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Maintaining Integrity of Structures, Systems, and Components Important to Safety During Construction at Multiunit Sites

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to require that, for multiunit sites, applicants for construction permits and operating licenses take proper precautions to assure the integrity of structures, systems, and components important to the safety of the operating unit or units during all construction activities. The amendments are being made in response to a petition for rulemaking filed by the Business and Professional People for the Public Interest. A notice of proposed rulemaking inviting public comments was published in the FEDERAL REGISTER on July 14, 1977. The effect of the amendments will be to formalize and clarify specific requirements as they apply to multiunit sites and to codify existing licensing practice. The rule would apply to applications received 6 months after the effective date of the rule.

EFFECTIVE DATE: September 6, 1978.

FOR FURTHER INFORMATION CONTACT:

Mr. Morton R. Fleishman, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone 301-443-5921.

SUPPLEMENTARY INFORMATION: By mailgram dated March 24, 1975, the Business and Professional People for the Public Interest (BPI), David Dinsmore Comey, director of environmental research, requested that the Nuclear Regulatory Commission (NRC) amend its regulation, 10 CFR part 50, to require licensees to shut down operating units of nuclear power units at multiunit facilities during periods when work on a unit under construction could compromise the integrity of the engineered safety features of an operating unit or units. As a basis for the petition, the petitioners referred to the fire which occurred on March 22, 1975, in the electrical cabling at TVA's Browns Ferry Nuclear Station.

A notice of the filing of a petition for rulemaking was published in the FEDERAL REGISTER on May 9, 1975 (40 FR 20371). Three sets of comments were received regarding the petition. All recommended denial of the petition on the general basis that the existing regulations provided the Commission with measures to deal with such situations as the petitioners had stated.

The Commission reviewed the applicable portions of the regulations as well as the manner in which the NRC staff conducts its licensing reviews and concluded that, while the present regulations and staff procedures during licensing reviews do provide a basis for effective action to be taken relative to safety at multiunit sites, the importance of the safety issues raised warranted amending the regulations to add specific requirements in this area. As a result, on July 14, 1977, the Commission published in the FEDERAL REGISTER (42 FR 36268) a notice of proposed rulemaking inviting written suggestions or comments on the proposed rule by August 29, 1977. The purpose of the proposed amendments was to formalize and clarify the specific requirements as they apply to multiunit sites and to explicitly state where and how the information developed should be presented.

Four persons submitted comments regarding the proposed amendments. Copies of the comments received may be examined in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C. Generally, comments either were similar to the comments received after publication of the notice of the petition for rulemaking or were similar to questions that were raised internally among the Commission's staff during the preparation of the proposed rule. For example, one of the commenters wanted to apply the rule to general maintenance and repair activities as well as construction activities. This was considered during the proposed rule phase and it was concluded that the existing regulations clearly covered such other activities. Another commenter suggested that it would be more appropriate to provide guidance on the subject in a regulatory guide. This question was also previously considered and it was decided that, since the regulations did not specifically address multiunit sites, they should be appropriately amended.

Another commenter questioned the practicality of requiring applicants for construction permits to identify potential hazards and recommended that the rule be restated to elicit how the construction activities will be controlled to assure the integrity of the operating reactor. Since the applicant for the construction permit for the new unit may not necessarily be the same as the licensee of the operating plant, the applicant might have no control over the operating plant. For this reason, the Commission thinks it would be more desirable to divide the responsibilities under the rule between the applicant for the new unit and the licensee for the existing unit. Further detailed guidance relative to specific safety items will be provided by appropriately revising Regulatory Guide 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants."

Another commenter felt that the present regulations were adequate and need not be amended. This option was also previously considered but the NRC believed that although the existing regulations do provide a basis for action, they do not explicitly cover construction at multiunit sites and thus should be clarified.

As previously indicated, no significant new adverse comments or significant questions have been received as a result of the notice of proposed rulemaking. Accordingly, after consideration of the comments that were received and other factors, the Commission has adopted the proposed amendments to part 50 without change as set forth below.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to 10 CFR part 50 are published as a document subject to codification.

43 FR 49776
Published 10/25/78
Effective 10/25/78

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Revocation of Certain Reporting Requirements

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulation "Domestic Licensing of Production and Utilization Facilities" to revoke two reporting requirements on antitrust information and to revoke a requirement for retention of 25 copies of the antitrust report during the antitrust review. These requirements are no longer needed.

EFFECTIVE DATE: October 25, 1978.

FOR FURTHER INFORMATION CONTACT:

Gerald L. Hutton, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone 301-492-7086.

SUPPLEMENTARY INFORMATION: Paragraph (c) of § 50.33a requires that any person who applies for a construction permit for a nuclear power reactor prior to July 28, 1975, shall submit the document titled "Information Requested by the Attorney General for Antitrust Review" as soon as possible. This paragraph (c) is being revoked on the basis that all antitrust reports required by paragraph (c) have been submitted.

Section 50.55b requires antitrust reports as a condition of certain construction permits and operating licenses. Section 50.55b is being revoked on the basis that all antitrust reports that may be required as a condition of the construction permits or operating licenses specified in § 50.55b have been submitted.

The last sentence of the introduction of appendix L of 10 CFR Part 50 requires the applicant to retain not less than 25 additional copies of the document titled "Information Requested by the Attorney General for Antitrust Review," to be available as needed during the antitrust review. Experience to date indicates that the 25 additional copies are not needed in the event of an antitrust hearing. Accordingly, this requirement is being revoked as unnecessary.

Because these amendments relate solely to minor matters, good cause exists for omitting notice of proposed rulemaking, and public procedure thereon, as unnecessary. Since the amendments are of a relieving nature and do not impose obligations on persons other than the Nuclear Regulatory Commission, the Commission has found that good cause exists for making the amendments effective immediately without the customary 30-day notice.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50 are published as a document subject to codification.

43 FR 50162
Published 10/27/78
Effective 11/27/78

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Standards for Combustible Gas Control Systems

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to clarify the Commission's position on its general design criterion regarding the Containment Design Basis and to provide a new section specifying the standards for combustible gas control systems.

EFFECTIVE DATE: November 27, 1978.

FOR FURTHER INFORMATION CONTACT:

James A. Norberg, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone 301-443-5921.

SUPPLEMENTARY INFORMATION: On October 21, 1976, the Nuclear Regulatory Commission (NRC), published the notice of proposed rulemaking in the FEDERAL REGISTER (41 FR 46167). Interested persons were invited to comment on the proposed rule by December 23, 1976. The notice concerned proposed amendments to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to require the applicant or licensee to show that during the time period immediately following a postulated loss-of-coolant accident (LOCA) but prior to effective operation of the combustible gas control system, either: (1) An uncontrolled hydrogen-oxygen recombination would not take place in the containment; or (2) the plant could withstand the consequences of uncontrolled hydrogen-oxygen recombination without loss of safety function. If neither of these conditions can be shown, the containment shall be provided with an inerted atmosphere in order to provide protection against hydrogen burning and explosions during this time period. Standards for combustible gas control systems also were included in the proposed amendments.

It should be noted that under either the proposed rule or the final rule (1) inerting of containment will not likely be required for plants with small containment volume (Mark I and II Boiling Water Reactors) if the licensee or applicant can show that the calculated metal-water reaction will be well within the acceptance criteria for emergency core cooling systems and (2) inerting of containment will not likely be needed for plants with large containment volume (Pressurized Water Reactors and Mark III Boiling Water Reactors) as long as ECCS acceptance criteria are met. The NRC staff has estimated that for all except two of the plants currently operating or under construction inerting containment would not be needed under this rule.

Fifteen interested persons submitted comments regarding the proposed amendments. The letters generally included numerous specific comments, but the most frequent comments could be roughly divided into three categories:

1. This inerting rule poses risks to plant personnel safety, reduces the number of unscheduled visual inspections, and increases plant operating cost.

2. The rule is too conservative in defining the amount of metal-water reaction.

3. The containment air dilution system requirement of the rule should be clarified and the manner in which the NRC will implement the rule should be clarified.

Copies of the comments may be examined in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C. 20555. A summary of the NRC's response to these comments is presented below.

1. The risks to plant personnel and reduced inspection capability accociated with inerting the containment were carefully considered and discussed in the notice of proposed rulemaking The NRC concluded that the risk to plant personnel of an inerted plant would be small provided that special procedures and personnel safety precautions are taken. The NRC also concluded that, on the inspection issue, inerting does not necessarily cause a reduction in the number of unscheduled visual inspections. Even assuming that a reduction in the number of unscheduled visual inspections does occur, such reduction does not adversely affect the protection of public health and safety since an adequate program of scheduled inspections can be maintained to insure safe operation of the plant. The NRC position on additional cost associated with requiring inerting is that the cost associated with inerting and de-inerting activities would be insignificant.

2. The NRC agrees that the proposed rule contains conservatisms, but disagrees that the rule is too conservative in defining the amount of metal-water reaction that must be assumed. It should be noted that in the proposed rule the amount of metal-water reaction assumed to occur after a LOCA is 5 times the amount calculated in accordance with § 50.46 or is the amount that would result from cladding surfaces surrounding the fuel to a depth of 0.00023 inch (0.0058 mm), whichever amount is greater. Therefore, the amount of metal-water reaction assumed in the proposed rule is less conservative for certain plants when compared with the 5 percent previously assumed by NRC. The detailed technical discussion for making this revision was presented in the notice of proposed rulemaking (41 FR 46167). In short, the factor of 5 or 0.00023-inch (0.0058 mm) depth number is based on an engineering judgment that this method provides a sufficient margin for the purpose of containment design. It is assumed for

conservatism that the emergency core cooling does not fail completely but that its performance is degraded to such an extent that a small fraction of the core becomes overheated. This could be caused by conservatively assuming the existence of a hot-spot effect of assumed coolant flow starvation resulting from (1) delivery of less-than-planned cooling to a localized area and (2) local flow blockage that might be associated with excessive fuel deformation, partial core support failure, etc. While such conditions are not assumed to lead to core meltdown, they are assumed to result in additional hydrogen production above that calculated by Appendix K, "ECCS Evaluational Models."

Currently NRC conducts several Loss-of-Coolant Accident/Emergency Core Cooling System (LOCA/ECCS) experimental verification and code development programs that have the potential for establishing the amount of conservatism in metal-water reaction. Pending further progress on the present LOCA/ECCS programs, the NRC has concluded at this time that no further consideration need be given to this matter.

3. Comments regarding clarification of the rule have been incorporated in the final rule but have not significantly changed the position expressed by the NRC in the proposed rule.

One commenter opposed adoption of the rule. This commenter believed that the change was unnecessary, because General Design Criteria 41, 42, 43, and 50 of Appendix A to 10 CFR Part 50 impose the requirements for combustible gas control, and revised Regulatory Guide 1.7,[1] "Control of Combustible Gas Concentrations in Containment Following a Loss-of-Coolant Accident," will provide adequate criteria and guidelines for combustible gas control systems. However, the NRC believes that the change is necessary because (1) General Design Criterion 41 states that containment atmosphere cleanup systems must be provided as necessary, but it is not specific in defining the types of cleanup systems (e.g., a combustible gas control system), (2) the method and basis for the calculation of hydrogen after a LOCA should be established, (3) the degraded ECCS operation is subject to many different interpretations if not specifically defined, (4) publishing a final rule would resolve a complex technical issue that was raised on inerting by the Atomic Safety and Licensing Appeal Board during the Vermont Yankee licensing proceeding, and (5) the rule has set forth limits of domain within which potential hydrogen explosion is possible as a result of degradation, but not total failure, of emergency core cooling functioning. The rule would thus provide guidance to future designers, who could design their plants to avoid the range of hydrogen concentrations that could have potential for explosion.

Assumptions acceptable to the NRC staff for evaluating and designing a combustible gas control system are presented in Revision 2 of Regulatory Guide 1.7. Regulatory Guide 1.7 (originally Safety Guide 7) was published in March 1971. Revision 1 to this guide was published in September 1976. After consideration of the comments received on the guide, Revision 2 to this guide is now being published.

Revision 2 to Regulatory Guide 1.7 is essentially the same as in Revision 1 with minor clarifying changes. Some concerns were raised in the guide about the meaning of partial burning of hydrogen in the containment. For hydrogen concentrations in the range of 4 to 6 volume percent, partial burning of the hydrogen above 4 volume percent may occur. However, in this range of 4 to 6 volume percent, the rate of flame propagation is less than the rate of rise of the flammable mixture. Therefore, the flame can propagate upward, but not horizontally or downward. In this case, only a fraction of hydrogen will burn in the containment, and complete combustion will not occur until the hydrogen concentration is increased above 6 volume percent.

Interested persons were invited to submit written comments by December 20, 1976, for consideration in connection with the proposed amendments. After consideration of the comments received and other factors involved, the Commission has adopted the amendments as set forth below.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to title 10, chapter I, Code of Federal Regulations, part 50, are published as a document subject to codification.

[1]Copies of the Revision 2 to Regulatory Guide 1.7 may be obtained by written request to the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Technical Information and Document Control.

44 FR 47918
Published 8/16/79
Effective 9/17/79

10 CFR Parts 50 and 70

Licensing of Production and Utilization Facilities; Facilities and Access for Resident Inspection

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to require power reactor licensees and construction permit holders and selected fuel facility licensees to provide (1) on site, rent-free, exclusive use of office space and (2) immediate licensee facility access to Commission inspection personnel. The rule is needed in order to facilitate implementation of a revised inspection program which was initiated in mid-1978. As a part of the revised program, the Commission is placing resident inspectors on site at selected nuclear power reactor construction sites, at selected power reactor sites in test and routine operations and at selected fuel facilities to observe and review licensee construction, operations, radiological safety, safeguards and environmental protection activities.

EFFECTIVE DATE: September 17, 1979

FOR FURTHER INFORMATION CONTACT: Mr. Edward L. Jordan, Assistant Director for Technical Programs, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Phone No. 301-492-8180.

SUPPLEMENTARY INFORMATION: On May 9, 1978, the Nuclear Regulatory Commission published in the Federal Register (43 FR 19960) a proposed amendment to its regulations, 10 CFR 50 *Licensing of Production and Utilization Facilities* and Part 70 *Special Nuclear Material*, which would implement authority of Section 161(o) of the Atomic Energy Act of 1954, as amended, and of the Energy Reorganization Act of 1974, as amended, in order to facilitate the on site resident inspection portion of its revised inspection program.

Interested persons were invited to submit written comments for consideration in connection with the proposed amendment by June 23, 1978. The comments which were received addressed three principal concerns: licensees should not be forced to provide rent-free space; the proposed space requirement was excessive and arbitrary; and inspector access provisions should be the same as for a regular plant employee.

In mid-1978, the Commission initiated a revised inspection program which includes the use of on site resident inspectors. Pursuant to Section 161(o) of the Atomic Energy Act of 1954, as amended, the Commission intends to place NRC resident inspectors on site at selected nuclear power reactor construction sites and at selected power reactor sites in test and in routine operation. Eventually the Commission expects to place full-time resident inspectors at all operating power reactors, at power reactors in later stages of construction and at selected fuel cycle facilities where nuclear reactor fuel is fabricated or processed. The resident inspector will observe and review licensee operations, construction safety, safeguards and environmental

protection activities to determine whether they are adequate, conducted properly and at the required frequency. Other regionally or headquarters based NRC personnel will continue to provide technical support and managment review as required for the inspection program.

In order to facilitate the performance of the resident inspection program it is necessary that office space be provided to selected Commission personnel. The regulation as adopted requires that the licensee provide on site, rent-free, exclusive office space upon the request of the Director, Office of Inspection and Enforcement. This requirement is not unique in that other federal departments and agencies have continuous inspection programs that require those subject to their regulations to furnish appropriate facilities to the inspectors.

Sufficient space is required in order to accommodate a full-time inspector, a part-time secretary and transient NRC personnel. The suggested space is 250 square feet but the rule does not specify an exact area. The space provided is expected to be commensurate with space normally provided to licensee employees. For sites with more than one power reactor unit or fuel facility it may be necessary to assign more than one resident inspector. If additional resident inspectors are assigned to a site, additional space will be requested.

In order to assure that the resident inspector or regionally based inspectors are afforded the opportunity to conduct unfettered reviews of work in progress it is necessary and the regulation requires, that properly identified inspectors be provided immediate access to the facility (the same as regular licensee employees). The inspectors afforded such access will be provided by the licensee that site-specific radiological safety and security information necessary for their safety, security, and radiological protection and will conform to all facility safety and security requirements.

A briefing on site-specific radiological protection practices, security and emergency response actions is appropriate and sufficient for unescorted access to other than vital areas, radiation areas and areas contaminated with radioactive material, for those NRC personnel who infrequently visit a site. As a result of the comments on the proposed rule the Commission reexamined the legal basis for the requirement that licensees provide office space and determined that the requirement is neither an arbitrary use of the Commission's regulatory power nor an unreasonable burden on the licensee.

As a result of the concerns expressed in the comments over excessive space requirements, the Commission has changed the proposed area requirement to guidance, with the condition that the space provided shall be commensurate with other office facilities at the site. Acceptability of the space is in the authority of the Director, Office of Inspection and Enforcement.

As a result of comments on the proposed rule, the provision for access by inspectors likely to conduct inspections at a specific facility has been reworded to emphasize that unfettered access for inspectors who are likely to inspect a specific facility, will be equivalent to that for a regular plant employee. Inspectors likely to inspect are those who are expected to conduct several inspections at the specific facility during a given year.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and Sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter 1, Code of Federal Regulations, Parts 50 and 70 are published as a document subject to codification.

44 FR 55326
Published 9/26/79
Effective 10/26/79

10 CFR Part 50

Domestic Licensing of Production and Utilization Facilities; Fracture Toughness Requirements for Nuclear Power Reactors

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations specifying fracture toughness and material surveillance program requirements for nuclear reactors to permit greater flexibility in meeting certain of these requirements and to simplify others by substituting references to National Standards that have already been incorporated by reference into the NRC's Regulations.

EFFECTIVE DATE: October 26, 1979.

FOR FURTHER INFORMATION CONTACT: Dr. P. N. Randall, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, 301–443–5997.

SUPPLEMENTARY INFORMATION: On March 28, 1979, the Nuclear Regulatory Commission published in the Federal Register (44 FR 18513) proposed amendments to its regulations, 10 CFR Part 50, "Licensing of Production and Utilization Facilities," which would amend Appendix G, "Fracture Toughness Requirements," with regard to material toughness requirements for bolts, and would amend Appendix H, "Reactor Vessel Material Surveillance Program Requirements," with regard to the location and method of attachment of surveillance capsule holders in the reactor vessel. Interested persons were invited to submit written comments by May 14, 1979. There were four adverse comments. All of them opposed adoption of the proposed rule on the grounds that the accident at Three Mile Island Unit 2 on March 28, 1979 had demonstrated that there should be no relaxation of regulatory requirements. None of the comments addressed the specific technical issues covered by the proposed rule. In response to these comments, the Commission has no reason to believe that the investigation of that accident will raise any question about these technical issues. Furthermore, the Commission believes that the proposed amendments will not reduce present safety margins. Therefore, after consideration of the comments, the Commission has adopted the amendments to Appendices G and H, 10 CFR Part 50, described below. The language of the amendments is unchanged from that of the proposed rule.

In Appendix G to 10 CFR Part 50, paragraph IV.A.4 contains requirements for the material toughness of bolts that are very similar to present ASME Code requirements. Paragraph IV.A.4 is deleted, and paragraph IV.A.3 is revised to add language requiring compliance with the pertinent ASME Code requirements for bolts. As an additional revision of paragraph IV.A.3, the requirements for piping, pumps and valves are clarified by referencing a different paragraph in the ASME Code than is presently referenced. This newly referenced paragraph contains the specific fracture toughness requirements of those components.

In Appendix H to 10 CFR Part 50, paragraph II.C.2 is revised in two respects. The prohibition against attachment of surveillance capsules to the vessel wall is deleted because, for some vessel designs, the advantages of attachment to the wall (fewer problems in achieving the desired lead factor and the structural integrity of the capsule holder) outweigh the disadvantage of concern for vessel integrity. Language is added to require that, if capsule holders are attached to the vessel wall, the attachments must meet ASME Code requirements for construction and inspection of permanent structural attachments to reactor vessels.

The fixed limits on lead factor (the ratio of neutron flux at the capsule to the maximum flux at the vessel inner wall) of greater than 1 but less than 3 are deleted. Enforcement of the present requirement would require modification of certain designs that have satisfactorily met all surveillance and structural requirements in service. Safety concerns are satisfied by retention of the general requirement on lead factor.

Copies of the abstract of comments and staff response, and copies of the value/impact analysis supporting the rule, are available for public inspection at the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C. Single copies may be obtained on request from the Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20550, Attention: P. N. Randall.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553, title 5 of the United States Code, the following amendments to 10 CFR Part 50 are published as a document subject to codification.

44 FR 57911
Published 10/9/79
Effective 11/1/79

10 CFR Part 50

Domestic Licensing of Production and Utilization Facilities; Codes and Standards for Nuclear Powerplants

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulation, "Codes and Standards," to incorporate by reference a new edition and addenda of a national code that provides rules for the construction of nuclear powerplant components. This amendment provides for the use of updated methods in nuclear powerplant construction.

EFFECTIVE DATE: November 1, 1979.

FOR FURTHER INFORMATION CONTACT: Mr. A. Taboada, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, (301–443–5999).

SUPPLEMENTARY INFORMATION: On December 18, 1978, the Nuclear Regulatory Commission published in the Federal Register (43 FR 58825) a proposed amendment to its regulations, 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to incorporate by reference new addenda to the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. The proposed amendment to 10 CFR 50.55a would incorporate by reference the Winter 1977 addenda and the Summer 1978 addenda to Section III of the ASME Boiler and Pressure Vessel Code and also contains minor and editorial changes.

The 1977 Edition of Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Code and Section XI addenda since the Summer 1975 Addenda have been evaluated by the staff and are being referenced with modifications in a separate amendment to the regulations.

The proposed amendments also included minor and editorial changes to 10 CFR 50.55a to make references to Section III in the regulations consistent with changes to Section III in the Winter 1977 Addenda. These changes in Section III of the ASME Code relate to the method for determining the edition and addenda applicable to components of the reactor coolant pressure boundary. The code presently provides that components meet the requirements of editions or addenda in effect on the date of purchase order of the components. Since the issuance of the Winter 1977 addenda, the code rules for selecting the applicable edition and addenda are more flexible. Under these rules, the licensee may establish the date of the code edition and addenda to be applied to a component. These dates may be the same for all components of a nuclear powerplant to accommodate standardization, but in no case may the dates be earlier than three years prior to the docket date for the application for the nuclear powerplant construction permit. These rules also permit more current code editions and addenda to be used. The proposed amendment would modify § 50.55a to be consistent with these changes in the code but would retain some restrictions in the regulations on the use of editions and addenda issued prior to the Winter 1972 Addenda.

Interested persons were invited to submit written comments for consideration in connection with the proposed amendment by January 17, 1979. Four letters were received in response to the notice of proposed rulemaking. In general the letters supported the proposed amendment and did not contain substantive negative comments. However, several suggestions for changes to the proposed amendment were made. Three of the letters suggested that the second sentence of proposed paragraph (b)(1) is ambiguous and should be clarified or deleted. This sentence states that "the edition and addenda selected for Section III for a given component also establishes a requirement that the identical edition or addenda be applicable to all other sections of the ASME Code used for the construction of the components".

The Commission agrees that the sentence in question is ambiguous and does not adequately describe, as intended, the code position on applicability of other sections of the code referenced in Section III. As written, the proposed rule could be interpreted to prohibit the use of newer editions and addenda of referenced sections and to require unnecessary additional welding qualification tests; interpretations not intended. The intent of this sentence was simply to describe the code position on the subject. Since the ASME Code has recently published an amplification of their position in Volume 3 of their publication, "Interpretations" (111–1–78–50) dated 1979, the sentence in question is not needed and has been deleted in the notice of rulemaking.

In the fourth letter received, the suggestion was made that footnote 5, which describes the code provisions for implementation of Section III, be amended to allow for retroactive implementation of paragraph NCA–1140 of Section III of the ASME Code which governs code edition and addenda applicability. These provisions permit new components of nuclear power plants to be constructed to an edition or addenda, to be determined by the owner of the plant, retroactive to the Winter 1977 Addenda. Footnote 5 was not revised because the Commission considers the ASME Code provisions and footnote 5 which cover this point to be adequate and appropriate. Using these rules, the principle of standardization may be applied to new construction but limited to editions and addenda since Winter 1977.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended and Sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10 Chapter 1, Code of Federal Regulations, Part 50, are published as a document subject to codification.

44 FR 57912
Published 10/9/79
Effective 11/1/79

10 CFR Part 50

Domestic Licensing of Production and Utilization Facilities; Codes and Standards for Nuclear Powerplants

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulation, "Codes and Standards," to incorporate by reference a new edition and addenda of a national code that provides rules for the inservice inspection of nuclear power plant components. This amendment provides for the use of updated methods in nuclear power plant inspection.

EFFECTIVE DATE: November 1, 1979.

FOR FURTHER INFORMATION CONTACT: Mr. A. Taboada, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, (301–443–5997).

SUPPLEMENTARY INFORMATION: On January 18, 1979, the Nuclear Regulatory Commission published in the Federal Register (44 FR 3719) a proposed amendment to its regulations, 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to incorporate by reference new addenda to a referenced section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. The amendment to 10 CFR 50.55a would incorporate by reference the 1977 Edition and addenda through the Summer 1978 Addenda to Section XI, "Inservice Inspection of Nuclear Power Plant Components," of the ASME Code with modifications.

The 1977 Edition of Section XI and addenda issued from Winter 1975 Addenda through the Winter 1977 Addenda, which had not been incorporated by reference in § 50.55a, contain several major changes to the code which, if incorporated into the NRC's regulations, would significantly reduce the examination requirements of inservice inspection programs presently required by the Commission for the reactor coolant pressure boundary and for systems required for safe shutdown of the reactor. It was the determination of the Commission that this edition and these addenda would be acceptable for incorporation by reference into the regulations only with appropriate modifications to retain those requirements considered necessary for an acceptable inservice inspection program.

In this regard, the Summer 1978 Addenda provide such modifications to Section XI of the ASME Code. Examination requirements removed from the code by the Winter 1975 Addenda through the Winter 1977 Addenda, but still required by the regulations, have either been restored or been superseded by provisions considered to be improvements.

In light of the changes in the Summer 1978 Addenda, the Commission is amending § 50.55a to incorporate by reference the 1977 Edition of Section XI of the ASME Code and Addenda through the Summer 1978 Addenda. Certain limitations and modifications to Section XI of the Code are included in the amendment to address the applicability of specific editions and addenda and to provide for flexibility and consistency in the implementation of the Code. The limitations and modifications include the following:

1. The applicability of certain code addenda to Section XI of the ASME Code is qualified to assure that appropriate inservice examination requirements are included in inservice inspection programs for nuclear facilities. These requirements were removed from Section XI of the Code in the Winter 1975 Addenda and have either been restored or have been superseded by acceptable alternatives in the Summer 1978 Addenda. The amendment, in effect, requires the application of the Summer 1978 Addenda to those inservice inspection programs that apply editions and addenda of Section XI from the Winter 1975 Addenda through the Winter 1977 Addenda.

2. The amendment provides Alternatives to the Code requirements for determining the extent and frequency of inservice inspection of pipe welds. Operating facilities and facilities in the construction stages with inservice inspection programs (facilities with applications for construction permits docketed prior to July 1, 1978) may apply the Summer 1975 Addenda in lieu of later Addenda for determining the examination program for Code Class 1 and Code Class 2 pipe welds. Only code addenda incorporated by reference in § 50.55a may be used by facility licensees for inspection programs, and the Summer 1975 Addenda are the last addenda so incorporated prior to this amendment. By applying this option, operating facilities with ongoing inservice inspection programs would have continuity in the extent and frequency of examinations for pipe welds. The amendment also provides for the use of the Summer 1975 Addenda for establishing the pipe welds to be examined in the Residual Heat Removal System, the Emergency Core Cooling System, and the Containment Heat Removal System pending the development of new code provisions with sampling plans for these systems.

3. Provisions added to article IWB–2000 of Section XI of the ASME Code by the Winter 1975 Addenda contained, for the first time, requirements for inservice inspection of steam generator tubing. However, it has been the practice of the Commission to include detailed provisions for the inservice inspection of steam generator tubing in the technical specifications for a specific reactor. The potential for conflicting requirements would exist if these code requirements were incorporated by reference into the regulations without appropriate modifications. Since the provisions in the technical specifications approved by the Commission are, in general, more complete and more current, the amendment requires that where differences between the code requirements in article IWB–2000 and the technical specifications for a particular reactor exist, the inservice inspection program for steam generator tubing shall be governed by the requirements in the technical specifications.

In addition to incorporation by reference the new ASME Code edition and addenda with modifications, the Commission has made several minor and clarifying amendments to § 50.55a. These include a change in the time interval for revising programs for inservice examination of components and for testing pumps and valves to make this interval consistent with the inservice inspection interval in Section XI of the ASME Code. The interval for revising inservice inspection programs for operating plants is extended from 40 and 20 months to 120 months. Such a change makes the regulation more practical to implement and saves time and effort for both the NRC and the licensee without an increased risk to the public health and safety. Extending the period for revising the program is not considered a significant relaxation of safety requirements since Section XI is a relatively mature code and new code changes generally deal with practical considerations of implementation or the application of new developments. New code changes do not normally modify the safety aspects of the code. Further, as stated in § 50.55a, the Commission may impose new code requirements at any time if safety considerations so dictate.

Interested persons were invited to submit to the Commission written comments on the proposed amendments for its consideration. Four letters with comments were received in response. In general, the letters supported the proposed amendment. No substantive negative comments were made. However, the letters did include requests for clarification of specific provisions of the proposed amendments. The proposed provisions in question have been clarified in the amendment.

Copies of the comments along with the comment anaylsis supporting this amendment are available for public inspection at the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. Single copies of the comments and comment analysis may be obtained upon request from A. Taboada, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter 1, Part 50 of the Code of Federal Regulations are published as a document subject to codification.

44 FR 60715
Published 10/22/79
Effective 10/22/79

Licensing of Production and Utilization Facilities; Antitrust Review Procedures

See Part 2 Statements of Consideration.

45 FR 13434
Published 2/29/80
Effective 2/29/80

Immediate Reporting of Significant Events at Operating Nuclear Power Reactors

See Part 20 Statements of Consideration.

45FR14199
Published 3/5/80
Effective 3/5/80

Minor and Clarifying Amendments

See Part 1 Statements of Consideration

45 FR 18905
Published 3/24/80
Effective 3/24/80

Deletion of reference to Panama Canal Zone; Minor Amendments

See Part 4 Statements of Consideration

45 FR 30614
Published 5/9/80
Effective 7/22/80

10 CFR Part 50

Periodic Updating of Final Safety Analysis Reports

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to require each person licensed to operate a nuclear power reactor to submit periodically to the Commission revised pages for its Final Safety Analysis Report (FSAR). These revised pages will indicate changes which have been made to reflect information and analyses submitted to the Commission or prepared as a result of Commission requirement. The amendment is being made to provide an updated reference document to be used in recurring safety analyses performed by the licensee, the Commission, and other interested parties.

EFFECTIVE DATE: July 22, 1980.

Note.—The Nuclear Regulatory Commission has submitted this rule to the Comptroller General for such review as may be appropriate under the Federal Reports Act, as amended, 44 U.S.C. 3512. The date on which the reporting requirement of this rule becomes effective, unless advised to the contrary, accordingly, reflects inclusion of the 45-day period which that statute allows for such review (44 U.S.C. 3512(c)(2)).

FOR FURTHER INFORMATION CONTACT: Mr. Morton R. Fleishman, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D C. 20555, telephone 301–443–5921.

SUPPLEMENTARY INFORMATION: On November 8, 1976, the Nuclear Regulatory Commission published in the **Federal Register** (41 FR 49123) a notice of proposed rule making inviting written suggestions or comments on the proposed rule by December 23, 1976. A notice of correction and extension of comment period was published in the **Federal Register** on December 27, 1976 (41 FR 56204) in which the comment period was extended to January 26, 1977. The notices concerned proposed amendments to 10 CFR Part 50, "Licensing of Production and Utilization Facilities," to require each applicant for, or holder of, a power reactor operating license which would be or was issued after January 1, 1963 to submit periodically to the Commission revised pages for its Final Safety Analysis Report (FSAR). These revised pages would indicate changes made in the facility or the procedures for its operation and any analyses affected by these changes. Thirty-one persons submitted comments regarding the proposed amendments. The commenters could be roughly divided into three groups with seventeen supporting the rule with comments, eleven opposed to the rule, and three neutral. Copies of the comments received may be examined in the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C.

The substantive areas of comment can be categorized generally as follows:

1. Clarification of Rule
2. Applicability of Rule
3. Content of FSAR
4. Scope of Rule
5. Timing of Submittals
6. Relation of Rule to Other Rules and Reports
7. Legal Status of Updated FSAR
8. Cost/Benefit of Rule

In response to the comments received, the Commission is modifying the rule to (a) extend its applicability to all power reactors licensed to operate, (b) exclude applicants for operating licenses, (c) clarify the wording of the rule, (d) reduce its impact on power reactor licensees by relaxing some of the time requirements, and (e) require the initial revision to be a complete FSAR.

When the proposed rule was published for public comment, its applicability was limited to those plants licensed after January 1, 1963 in order to exempt five (5) older facilities. The Commission believed that it would not be feasible for these licensees to implement the rule because there is no integrated document comparable to an FSAR for their facilities. Since publication of the proposed rule, the Commission has initiated a program in which the NRC staff is making a systematic safety evaluation of eleven (11) nuclear power facilities licensed for operation before 1972. The purpose of this systematic evaluation program (SEP) is to determine and document the degree to which the eleven (11) facilities meet current licensing requirements for new plants. Of the five (5) plants licensed prior to January 1, 1963 that are still licensed to operate, three (3) are included in the SEP. The remaining two (2) plants,[1] which presently are shut down, will be subject to the provisions of the rule as long as their licenses authorize operation.

The licensees participating in the SEP probably will be requested to supply a considerable amount of information during the program. Requiring them, in addition, to update their FSARs could prove to be excessively burdensome and could result in duplication of reports.

[1] The two facilities are Indian Point Unit No. 1 and Humboldt Bay Unit No. 3.

The information generated during the program and the manner in which it is collated will result in a completed FSAR at the conclusion of the program. For these reasons licensees of facilities being subjected by the NRC to a systematic evaluation program will not be required to comply with the provisions of this rule until they are notified by letter by the NRC's Director of the Office of Nuclear Reactor Regulation that, for their particular facility, the program has been completed. Because of the considerations just mentioned, that part of the proposed rule which limited the applicability to facilities licensed after January 1, 1963 has been deleted and the rule will apply to all power reactors licensed to operate.

The FSAR required to be updated by the rule is the original FSAR submitted as part of the application for the operating license. It would not include the subsequent supplements and amendments to the FSAR or the license that may have been submitted either in response to NRC questions or on the applicant's or licensee's own initiative following the original submittal. These various supplements and amendments must be appropriately incorporated into the original FSAR to create a single, complete and integral document. The initial revision to be filed should contain those pages from the originally submitted FSAR that are still applicable plus new replacement pages that appropriately incorporate the effects of supplements, amendments and other changes that have been made. This will result in a single, complete document being filed, that can then serve as the baseline for future changes.

Commenters have asked about the proper format to be used when making the FSAR submittal. Since the format of the FSAR is not covered by regulation, the rule does not specify a particular format. The NRC staff has provided guidance for the preparation of FSARs in Regulatory Guide 1.70, Revision 2, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants." However, many FSARs were developed prior to any specific guidance on format. The format to be used for the FSAR revisions is the option of the licensee, but the Commission expects that the format will probably be the same as the format of the original FSAR. No analyses other than those already prepared or submitted pursuant to NRC requirements (either originally with the application, or as part of the operating license review process, or as required by § 50.59 or other NRC requirement, or to support license amendments) are required to be performed by the licensee because of this rule. However, analyses existing in the FSAR which are known to be inaccurate or in error as a result of new analyses performed by the licensee pursuant to NRC requirements, would have to be revised. Specialized studies provided in the FSAR, such as on volcanic hazards or quality assurance, should include the latest information that has been developed in response to NRC requirements. New analyses (i.e., analyses not previously included in FSAR) which were required during consideration of unreviewed safety questions,[2] technical specification changes, or other licensing questions, may be incorporated as appendices or otherwise appropriately inserted within the FSAR.

Program type material that is referenced by the FSAR, such as the Quality Assurance Program or the Emergency Plan, should be referenced accurately. If such material has been revised or amended, the latest revision should be referenced. A description of physical changes to the facility should be included in the update after the changes have been approved for use and are operable. The level of detail to be maintained in the updated FSAR should be at least the same as originally provided. Minor differences between actual and projected population figures or other such changes in the site environment need not be reported unless the conclusions of safety analyses relative to public health and safety are affected and the licensee has prepared new analyses as a result of NRC requirements.

Commenters have questioned the relation of the proposed FSAR updating requirements to other reporting requirements such as the Annual Operating Report and § 50.59(b) reporting. It is not the Commission's intention to require submittal of duplicative reports. The Commission is eliminating the requirement for the Annual Operating Report. This will reduce significantly the reporting burden of licensees. There has been no requirement that § 50.59(b) reporting be part of the licensee's Annual Operating Report. This information generally has been included in the Annual Operating Report as a convenience, but it could have been submitted separately and the licensee still would have complied with § 50.59(b) which merely requires reporting "annually or at such shorter intervals as may be specified in the license." Furthermore, the report required under § 50.59(b) is only "a brief description of such changes, tests, and experiments, including a summary of the safety evaluation of each." The § 50.59(b) reporting may not be detailed sufficiently to be considered adequate to fulfill the FSAR updating requirement. The degree of detail required for updating the FSAR will be generally greater than a "brief description" and a "summary of the safety evaluation." However, there is nothing that precludes submitting the § 50.59(b) report along with the FSAR update submittal and thus satisfy § 50.59(b) along with § 50.71(e). Parts of the FSAR submittal may be referenced by the § 50.59(b) report.

Several commenters have raised legal questions concerning the proposed rule including questions relative to the purpose of the rule, the implication concerning re-reviews, the status of completed hearings, and prior license approvals. The rule is only a reporting requirement to insure that an updated FSAR will be available. Submittal of updated FSAR pages does not constitute a licensing action but is only intended to provide information. It is not intended for the purpose of re-reviewing plants. Matters which have been considered previously during hearings will not be reconsidered as a result of the FSAR submittals. Thus, for example, approvals of license amendments and technical specification changes are independent of the FSAR updating process and once approved would not be subject to further consideration simply because the FSAR is updated. This, of course, does not preclude the reevaluation of previous positions based on new information or new considerations. The material submitted may be reviewed by the NRC staff but will not be formally approved. The new pages will be accepted as representing the licensee's position at the time of submittal and will be utilized in any subsequent reviews or NRC staff activities concerning that facility.

After consideration of the comments that were received and other factors, the Commission has adopted the amendment to Part 50 as set forth below.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of title 5 of the United States Code, the following amendment to 10 CFR Part 50 is published as a document subject to codification.

[2] As defined in § 50.59(a)(2), "A proposed change, test, or experiment shall be deemed to involve an unreviewed safety question (i) if the probability of occurrence or the consequence of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased; or (ii) if a possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report may be created; or (iii) if the margin of safety as defined in the basis for any technical specification is reduced."

45 FR 50705
Published 7/31/80
Effective 7/31/80
Effective Date 12/24/80 *
Safeguards on Nuclear Material-Implementation of US/IAEA Agreement

See Part 75 Statements of Consideration.

45 FR 55402
Published 8/19/80
Effective 11/3/80

10 CFR Parts 50 and 70

Emergency Planning

AGENCY: U.S. Nuclear Regulatory Commission.
ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is upgrading its emergency planning regulations in order to assure that adequate protective measures can and will be taken in the event of a radiological emergency. Nuclear power plants and certain other licensed facilities are required to submit their emergency plans, together with the emergency response plans of State and local governments, to the Commission. The Commission and the Federal Energy Management Agency will review the plans for adequacy. The amendment also extends emergency planning considerations to "Emergency Planning Zones", and makes additional clarifications.

EFFECTIVE DATE: November 3, 1980.

Note.—The Nuclear Regulatory Commission has submitted this rule to the Comptroller General for review of the reporting requirements in the rule, pursuant to the Federal Reports Act, as amended (44 U.S.C. 3512). The date on which the reporting requirements of the rule become effective includes a 45-day period, which the statute allows for Comptroller General review (44 U.S.C. 3512(c)(2)).

FOR FURTHER INFORMATION CONTACT: Mr. Michael T. Jamgochian, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (telephone: 301–443–5966).

SUPPLEMENTARY INFORMATION: On September 19, 1979 and on December 19, 1979, the Commission published for public comment (44 FR 54308 and 44 FR 75167) proposed amendments to its emergency planning regulations for production and utilization facilities. Extensive comments were received, all of which were evaluated and considered in developing the final rule. The comments received and the staff's evaluation is contained in NUREG–0684. In addition, the NRC conducted four Regional Workshops to solicit comments; these comments are available in NUREG/CP–0011 (April 1980).[1]

The final regulation contains the following elements:

1. In order to continue operations or to receive an operating license an applicant/licensee will be required to submit its emergency plans, as well as State and local governmental emergency response plans, to NRC. The NRC will then make a finding as to whether the state of onsite and offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. The NRC will base its finding on a review of the Federal Emergency Management Agency (FEMA) findings and determinations as to whether State and local emergency plans are adequate and capable of being implemented and on the NRC assessment as to whether the licensee's/applicant's emergency plans are adequate and capable of being implemented. These issues may be raised in NRC operating license hearings, but a FEMA finding will constitute a rebuttable presumption on the question of adequacy,
2. Emergency planning considerations will be extended to "Emergency Planning Zones,"
3. Detailed emergency plan implementing proceudres of licensees/applicants will be required to be submitted to NRC for review, and
4. Requirements in 10 CFR Part 50, Appendix E are clarified and upgraded.

Background

In June 1979, the Nuclear Regulatory Commission began a formal reconsideration of the role of emergency planning in ensuring the continued protection of the public health and safety in areas around nuclear power facilities. The Commission began this reconsideration in recognition of the need for more effective emergency planning and in response to the TMI accident and to reports issued by responsible offices of government and the NRC's Congressional oversight committees.

On December 19, 1979, the Nuclear Regulatory Commission published in the **Federal Register** (44 FR 75167) proposed amendments to 10 CFR Part 50 and Appendix E to Part 50 of its regulations. Publication of these final rule changes in the **Federal Register** is not only related to the December 19, 1979 proposed rule changes but also incorporates the proposed changes to 10 CFR Parts 50 and 70 (44 FR 54308) published on September 19, 1979. Interested persons were invited to submit written comments/suggestions in connection with the proposed amendments within 60 days after publication in the **Federal Register.** During this comment period (in January 1980) the Commission conducted four regional workshops with State and local officials, utility representatives, and the public to discuss the feasibility of the various portions of the proposed amendments, their impact, and the procedures proposed for complying with their provisions. The NRC used the information from these workshops along with the public comment letters to develop the final rule (more than 200 comment letters and the points made in two petitions for rulemaking were also considered).

In addition to the above, on June 25, 1980, the Commission was briefed by three panels of public commenters on the rule, one each comprised of representatives from the industry, State and local governments, and public interest groups. Each panel raised important concerns regarding the final rule. On July 3, 1980, the Commission was briefed by its staff in response to these panels, including several modifications to the proposed final rules. Finally, on July 23, 1980, at the final Commission consideration of these rules, the Commission was briefed by the General Counsel on the substance of conversations with Congressional staff members who were involved with passage of the NRC Authorization Act for fiscal year 1980, Pub. L. No. 96–295. The General Counsel advised the Commission that the NRC final rules were consistent with that Act. The Commission has relied on all of the above information in its consideration of these final rules. In addition, the Commission directs that the transcripts of these meetings shall be part of the administrative record in this rulemaking. However, the transcripts have not been reviewed for accuracy and, therefore, are only an informal record of the matters discussed.

After evaluating all public comment letters received and all the information obtained during the workshops as well as additional reports such as the Presidential Commission and the NRC Special Inquiry Group Reports, the Commission has decided to publish the final rule changes described below.

*Amended 45 FR 84967

[1] Copies of NUREG documents are available at the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. 20555. Copies may be purchased from the Government Printing Office. Information on current prices may be obtained by writing the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Publications Sales Manager.

Description of Final Rule Changes

The Commission has decided to adopt a version of the proposed rules similar to alternative A described in Sections 50.47 and 50.54 in the **Federal Register** Notice dated December 19, 1979 (44 FR 75167), as modified in light of comments. These rules are consistent with the approach outlined by FEMA and NRC in a Memorandum of Understanding (45 FR 5847, January 24, 1980). No new operating license will be granted unless the NRC can make a favorable finding that the integration of onsite and offsite emergency planning provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. In the case of an operating reactor, if it is determined that there are such deficiencies that a favorable NRC finding is not warranted and if the deficiencies are not corrected within 4 months of that determination, the Commission will determine expeditiously whether the reactor should be shut down or whether some other enforcement action is appropriate, pursuant to procedures provided for in 10 CFR 2.200–2.206. In any case where the Commission believes that the public health, safety, or interest so requires, the plant will be required to shut down immediately (10 CFR 2.202(f), see 5 U.S.C. 558(c)).

The standards that the NRC will use in making its determinations under these rules are set forth in the final regulation. Wherever possible, these standards may blend with other emergency planning procedures for nonnuclear emergencies presently in existence. The standards are a restatement of basic NRC and now joint NRC–FEMA guidance to licensees and to State and local governments. See NUREG–0654; FEMA–REP–1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants for Interim Use and Comment," (January 1980). In deciding whether to permit reactor operation in the face of some deficiencies, the Commission will examine among other factors whether the deficiencies, are significant for the reactor in question, whether adequate interim compensatory actions have been or will be taken promptly, or whether other compelling reasons exist for reactor operation. In determining the sufficiency of "adequate interim compensatory actions" under this rule, the Commission will examine State plans, local plans, and licensee plans to determine whether features of one plan can compensate for deficiencies in another plan so that the level of protection for the public health and safety is adequate. This interpretation is consistent with the provisions of the NRC Authorization Act for fiscal year 1980, Pub. L. 96–295.

The regulation contains the following three major changes from past practices:

1. In order to continue operations or to recieve an operating license, an applicant/licensee will be required to submit its emergency plans, as well as State and local governmental emergency response plans, to NRC. The NRC will then make a finding as to whether the state of onsite and offsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

The NRC will base its finding on a review of the FEMA findings and determinations as to whether State and local emergency plans are adequate and capable of being implemented and on the NRC assessment as to whether the applicant's/licensee's emergency plans are adequate and capable of being implemented. In any NRC licensing proceeding, a FEMA finding will consitute a rebuttable presumption on the question of adequacy. Specifically:

a. An operating license will not be issued unless a favorable NRC overall finding can be made.

b. After April 1, 1981, an operating plant may be required to shut down if it is determined that there are deficiencies such that a favorable NRC finding cannot be made or is no longer warranted and the deficiencies are not corrected within 4 months of that determination.

2. Emergency planning considerations must be extended to "Emergency Planning Zones," and

3. Detailed emergency planning implementing procedures of both licensees and applicants for operating licenses must be submitted to NRC for review.

In addition, the Commission is revising 10 CFR Part 50, Appendix E, "Emergency Plans for Production and Utilization Facilities," in order to clarify, expand, and upgrade the Commission's emergency planning regulations. Sections of Appendix E that are expanded include:

1. Specification of "Emergency Action Levels" (Sections IV.B and C)

2. Dissemination to the public of basic emergency planning information (Section IV.D)

3. Provisions for the State and local governmental authorities to have a capability for rapid notification of the public during a serious reactor emergency, with a design objective of completing the initial notification within 15 minutes after notification by the licensee (Section IV.D)

4. A licensee onsite technical support center and a licensee near site emergency operations facility (Section IV.E)

5. Provisions for redundant communications systems (Section IV.E)

6. Requirement for specialized training (Section IV.F)

7. Provisions for up-to-date plan maintenance (Section IV.G)

Applicants for a construction permit would be required to submit more information as required in the new Section II of Appendix E.

Rationale for the Final Rules

The Commission's final rules are based on the significance of adequate emergency planning and preparedness to ensure adequate protection of the public health and safety. It is clear, based on the various official reports described in the proposed rules (44 FR 75169) and the public record compiled in this rulemaking, that onsite and offsite emergency preparedness as well as proper siting and engineered design features are needed to protect the health and safety of the public. As the Commission reacted to the accident at Three Mile Island, it became clear that the protection provided by siting and engineered design features must be bolstered by the ability to take protective measures during the course of an accident. The accident also showed clearly that onsite conditions and actions, even if they do not cause significant offsite radiological consequences, will affect the way the various State and local entities react to protect the public from any dangers associated with the accident. In order to discharge effectively its statutory responsibilities, the Commission must know that proper means and procedures will be in place to assess the course of an accident and its potential severity, that NRC and other appropriate authorities and the public will be notified promptly, and that adequate protective actions in response to actual or anticipated conditions can and will be taken.

The Commission's organic statutes provide it with a unique degree of discretion in the execution of agency functions. *Siegel* v. *AEC*, 400 F.2d 778, 783 (D.C. Cir. 1968), see *Westinghouse Electric Corp.* v. *NRC*, 598 F.2d 759, 771 & n.47 (3d Cir. 1979). "Both the Atomic Energy Act of 1954 and the Energy Reorganization Act of 1974 confer broad regulatory functions on the Commission and specifically authorize it to promulgate rules and regulations it deems necessary to fulfill its responsibilities under the Acts, 42 U.S.C. § 2201(p)." *Public Service Co. of New Hampshire* v. *NRC*, 582 F.2d 77, 82 (1st Cir.), *cert. denied*, 439 U.S. 1046 (1978). *See* 42 U.S.C. 2133(a). As the Supreme

Court stated almost 20 years ago, the Atomic Energy Act "clearly contemplates that the Commission shall by regulation set forth what the public safety requirements are as a prerequisite to the issuance of any license or permit under the Act," *Power Reactor Development Co.* v. *International Union of Electrical Radio Machine Workers*, 367 U.S. 396, 404 (1961). Finally, it is also clear that "Congress, when it enacted [42 U.S.C. 2236] . . ., must have envisioned that licensing standards, especially in the areas of health and safety regulation, would vary over time as more was learned about the hazards of generating nuclear energy. Insofar as those standards became more demanding, Congress surely would have wanted the new standards, if the Commission deemed it appropriate, to apply to those nuclear facilities already licensed," *Ft. Pierce Utilities Authority* v. *United States*, 606 F.2d 986, 996 (D.C. Cir. 1979).

In response to and guided by the various reports and public comments, as well as its own determination on the significance of emergency preparedness, the Commission has therefore concluded that adequate emergency preparedness is an essential aspect in the protection of the public health and safety. The Commission recognizes there is a possibility that the operation of some reactors may be affected by this rule through inaction of State and local governments or an inability to comply with these rules. The Commission believes that the potential restriction of plant operation by State and local officials is not significantly different in kind or effect from the means already available under existing law to prohibit reactor operation, such as zoning and land-use laws, certification of public convenience and necessity, State financial and rate considerations (10 CFR 50.33(f)), and Federal environmental laws. The Commission notes, however, that such considerations generally relate to a one-time decision on siting, whereas this rule requires a periodic renewal of State and local commitments to emergency preparedness. Relative to applying this rule in actual practice, however, the Commission need not shut down a facility until all factors have been thoroughly examined. The Commission believes, based on the record created by the public workshops, that State and local officials as partners in this undertaking will endeavor to provide fully for public protection.

Summary of Comments on Major Issues

The Commission appreciates the extensive public comments on this important rule. In addition to the record of the workshops, the NRC has received over 200 comment letters on the proposed rule changes. The following major issues have been raised in the comments received.

Issue A: NRC Review and Concurrence in State and Local Radiological Plans

1. FEMA is best suited to assess the adequacy of State and local radiological emergency planning and preparedness and report any adverse findings to NRC for assessment of the licensing consequences of those findings.

2. The proposed rule fails to provide objective standards for NRC concurrence, reconcurrence, and withdrawal of concurrence.

3. In the absence of additional statutory authority, the proposed rule frustrates Congressional intent to preempt State and local government veto power over nuclear power plant operation.

4. Procedures and standards for adjudication of emergency planning disputes are not adequately specified in the proposed rule.

Issue B: Emergency Planning Zones (EPZs)

1. Regulatory basis for imposition of the Emergency Planning Zone concept should be expressly stated in the regulation.

2. Provisions regarding the plume exposure pathway EPZ should provide a maximum planning distance of 10 miles.

3. References to NUREG–0396 should be deleted to avoid disputes over its meaning in licensing proceedings.

Issue C: Alternative A and B (in 50.47 and 50.54)

1. Neither alternative is necessary because the Commission has sufficient authority to order a plant shut down for safety reasons and should be prepared to exercise that authority only on a case-by-case basis and when a particular situation warrants such action.

2. No case has been made by the Commission for the need for automatic shutdown, as would be required in alternative B, and certainly no other NRC regulations exist that would require such action based on a concept as amorphous as "concurrence in State and local emergency plans."

3. The idea that the Commission might grant an exemption to the rules that would permit continued operation (under alternative B) has little significance, primarily because 10 CFR Part 50.12(a) already permits the granting of exemptions.

4. The process and procedures for obtaining such exemptions are not defined, nor is there any policy indication that would indicate the Commission's disposition to grant such exemptions.

5. The Commission, in developing this aspect of the proposed rule, must consider its own history. There was time when regulation was characterized by the leaders of the agency by simple and very appropriate expressions. The process was to be "effective and efficient." The application of regulatory authority was to be "firm, but fair." Regardless of the outcome of the "concurrence" issue, the Commission must appreciate that alternative B is not fair. It is not effective regulation.

Issue D: Public Education

Only information required to inform the public about what to do in the event of a radiological emergency need be disseminated. There should be flexibility, in any particular case, as to who will be ultimately responsible for disseminating such information.

Issue E: Legal Authority

1. A few commenters felt that NRC had no authority to promulgate a rule as the one proposed.

2. Other comments were the nature that NRC has statutory authority only inside the limits of the plant site.

3. Some commenters suggested that NRC and FEMA should seek additional legislation to compel State and local governments to have emergency plans, if that is what is necessary.

Issue F: Schedule for Implementation

The schedule for implementing the proposed rule was considered to be unrealistic and in some cases in conflict with various State schedules already in existence. A sampling of the comments on the implementation schedule follows:

1. The 180 days in the schedule is an insufficient amount of time to accomplish tasks of this magnitude; the Federal government does not work with such speed. States are bureaucracies also; there is no reason to assume they can work faster. It took years of working with States to get the plans that are presently concurred in. It is just insufficient time for new concurrences and review. Also, to get a job done within that time frame means a hurried job, rather than an acceptable and meaningful plan.

2. The time provided is inadequate for States to acquire the hardware needed. States must go out for competitive bids just as the Federal government does. Between processing and accepting a bid and actual delivery of equipment, it may take a year to get the hardware. The State budgets years ahead; therefore, if a State or local government needs more money, it may have to go to the

legislature. This is a time-consuming public process that may not fit the Federal schedule.

3. NRC and FEMA could not review 70 or more plans and provide concurrence by January 1, 1981. The Federal government moves slowly. Commenters did not think that NRC and FEMA can review all the plans within the time frame scheduled. If the Federal government cannot meet its schedule, why or how should the States?

4. Funding could not be appropriated by State and local governments before the deadline. It was suggested that the Commission use H. Rept. #96–413, "Emergency Planning U.S. Nuclear Power Plants: Nuclear Regulatory Commission Oversight," for the time frame rather than that in the proposed rule or use a sliding-scale time frame since States are at various stages of completing their emergency plans.

Issue G: Impact of Proposed Rule

1. The proposed regulations were considered by some commenters as unfair to utilities because it was felt they place the utilities in the political and financial role that FEMA should be assuming. NRC is seen as in effect giving State and local governments veto over the operation of nuclear plants. It was questioned whether this was an intent of the rule. In addition, it was felt that utilities, their customers, and their shareholders should not be penalized by a shutdown (with a resulting financial burden) because of alleged deficiencies or lack of cooperation by State and local officials.

2. It was suggested that NRC's Office of Inspection and Enforcement conduct the reviews of the State and local governmental emergency response plans in order to ensure prompt, effective, and consistent implementation of the proposed regulations.

3. One commenter noted that the public should be made aware of the issue of intermediate and long-term impacts of plant shutdowns. Specifically, people should be informed of the possibility of "brownouts," cost increases to the consumer due to securing alternative energy sources, and the health and safety factors associated with those alternative sources.

Issue H: Public Notification

1. Ultimate responsibility for public notification of a radiological emergency must be placed on State and local government.

2. The "fifteen minute" public notification rule is without scientific justification, fails to differentiate between areas close in and further away from the site, and ignores the technical difficulties associated with such a requirement.

Issue I: Emergency Action Levels

Applicants, in cooperation with State and local governmental authorities, should be permitted the necessary flexibility to develop emergency action level criteria appropriate for the facility in question, subject to NRC approval. Inflexible NRC emergency action level standards are not necessary.

Issue J: Training

1. Mandatory provision for training local service personnel and local news media persons is outside of NRC's jurisdiction and is not necessary to protect the public health and safety.

2. Public participation in drills or critiques thereof should not be required.

3. The provision regarding formal critiques should be clarified to mean the licensee is responsible for developing and conducting such critiques.

4. Definitive performance criteria for evaluation of drills should be developed by the licensee, subject to NRC approval.

Issue K: Implementing Procedures

NRC review of implementing procedures is only necessary to apprise the NRC staff of the details of the plans for use by the NRC during the course of an actual emergency.

Issue L: Funding

1. Nuclear facilities, although located in one governmental tax jurisdiction and taxed by that jurisdiction, affect other jurisdictions that must bear immediate and long-term planning costs without having access to taxes from the facility.

2. As the radius of planning requirements becomes greater, few facilities are the concern of a single county. The planning radius often encompasses county lines, State lines, and in some instances, international boundaries.

3. As new regulations are generated to oversee the nuclear industry and old ones expanded, there is an immediate need to address fixed nuclear facility planning at all levels of government, beginning at the lowest and going to the highest. All levels of government need access to immediate additional funds to upgrade their response capability.

4. It is well understood that the consumer ultimately must pay the price for planning, regardless of the level in government at which costs are incurred. It becomes a matter of how the consumer will be taxed, who will administer the tax receipts, and what is the most effective manner in which to address the problem.

5. The basis for effective offsite response capabilities is a sound emergency preparedness program. Federal support (funding and technical assistance) for the development of State and local offsite capabilities should be incorporated into FEMA's preparedness program for all emergencies.

Issue M: General

The States support Federal oversight and guidance in the development of offsite response capabilities. However, many States feel the confusion and uncertainty in planning requirements following Three Mile Island is not a proper environment in which to develop effective capabilities nor does it serve the best interests of their citizens. The development of effective nuclear facility incident response capabilities will require close coordination and cooperation among responsible Federal agencies, State government, and the nuclear industry. An orderly and comprehensive approach to this effort makes it necessary that onsite responsibilities be clearly associated with NRC and the nuclear industry while deferring offsite responsibilities to State government with appropriate FEMA oversight and assistance.

In addition to these comments, two petitions for rulemaking were filed in reference to the proposed rule. These were treated as public comments rather than petitions and were considered in developing the final rule.

The Commission has placed the planning objectives from NUREG–0654; FEMA–REP–1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants for Interim Use and Comment," January 1980, into the final regulations. Comments received concerning NUREG–0654 were available in developing the final regulation. The Commission notes that the planning objectives in NUREG–0654 were largely drawn from NUREG–75/111, "Guide and Checklist for Development and Evaluation of State and Local Government Radiological Emergency Response Plans in Support of Fixed Nuclear Facilities," (December 1, 1974) and Supplement 1 thereto dated March 15, 1977, which have been in use for some time.

The approximately 60 public comment letters received on NUREG–0654 were not critical of the proposed planning objectives. The Commission also notes that at the May 1, 1980 ACRS meeting, the Atomic Industrial Forum representative encouraged the use of the planning objectives from NUREG–0654 in the final regulations in order to

reduce ambiguity and provide specificity to the final regulation.

Based on the above, the Commission has decided to modify the proposed rule changes in the areas discussed in paragraphs I through X below.

I. FEMA/NRC Relationship

In issuing this rule, NRC recognizes the significant responsibilities assigned to FEMA, by Executive Order 12148 on July 15, 1979, to coordinate the emergency planning functions of executive agencies. In view of FEMA's new role, NRC agreed on September 11, 1979, that FEMA should henceforth chair the Federal Interagency Central Coordinating Committee for Radiological Emergency Response Planning and Preparedness (FICCC). On December 7, 1979, the President issued a directive assigning FEMA lead responsibility for offsite emergency preparedness around nuclear facilities. The NRC and FEMA immediately initiated negotiations for a Memorandum of Understanding (MOU) that lays out the agencies' roles and provides for a smooth transfer of responsibilities. It is recognized that the MOU, which became effective January 14, 1980, supersedes some aspects of previous agreements. Specifically, the MOU identifies FEMA responsibilities with respect to emergency preparedness as they relate to NRC as the following:

1. To make findings and determinations as to whether State and local emergency plans are adequate.
2. To verify that State and local emergency plans are capable of being implemented (e.g., adequacy and maintenance of procedures, training, resources, staffing levels and qualification, and equipment).
3. To assume responsibility for emergency preparedness training of State and local officials.
4. To develop and issue an updated series of interagency assignments that delineate respective agency capabilities and responsibilities and define procedures for coordination and direction for emergency planning and response.

Specifically, the NRC responsibilities for emergency preparedness identified in the MOU are:

1. To assess licensee emergency plans for adequacy.
2. To verify that licensee emergency plans are adequately implemented (e.g., adequacy and maintenance of procedures, training, resources, staffing levels and qualifications, and equipment).
3. To review the FEMA findings and determinations on the adequacy and capability of implementation of State and local plans.
4. To make decisions with regard to the overall state of emergency preparedness (i.e., integration of the licensee's emergency preparedness as determined by the NRC and of the State/local governments as determined by FEMA and reviewed by NRC) and issuance of operating licenses or shutdown of operating reactors.

In addition, FEMA has prepared a proposed rule regarding "Review and Approval of State Radiological Emergency Plans and Preparedness" (44 FR 42342, dated June 24, 1980). According to the proposed FEMA rule, FEMA will approve State and local emergency plans and preparedness, where appropriate, based upon its findings and determinations with respect to the adequacy of State and local plans and the capabilities of State and local governments to effectively implement these plans and preparedness measures. These findings and determinations will be provided to the NRC for use in its licensing process.

II. Emergency Planning Zone Concept

The Commission notes that the regulatory basis for adoption of the Emergency Planning Zone (EPZ) concept is the Commission's decision to have a conservative emergency planning policy in addition to the conservatism inherent in the defense-in-depth philosophy. This policy was endorsed by the Commission in a policy statement published on October 23, 1979 (44 FR 61123). At that time the Commission stated that two Emergency Planning Zones (EPZs) should be established around each light-water nuclear power plant. The EPZ for airborne exposure has a radius of about 10 miles; the EPZ for contaminated food and water has a radius of about 50 miles. Predetermined protective action plans are needed for the EPZs. The exact size and shape of each EPZ will be decided by emergency planning officials after they consider the specific conditions at each site. These distances are considered large enough to provide a response base that would support activity outside the planning zone should this ever be needed.

III. Position on Planning Basis for Small Light-Water Reactors and Ft. St. Vrain

The Commission has concluded that the operators of small light-water-cooled power reactors (less than 250 MWt) and the Ft. St. Vrain gas-cooled reactor may establish smaller planning zones which will be evaluated on a case-by-case basis. This conclusion is based on the lower potential hazard from these facilities (lower radionuclide inventory and longer times to release significant amounts of activity in many scenarios). Guidance regarding the radionuclides to be considered in planning is set forth in NUREG–0396; EPA 520/1–78–016, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in Support of Light-Water Nuclear Power Plants," December 1978.

IV. Rationale for Alternatives Chosen

In a few areas of the proposed rule, the Commission identified two alternatives that it was considering. Many public comments were received on these alternatives; based on due consideration of all comments received as well as the discussions presented during the workshops, the Commission has determined which of each pair of alternatives to retain in the final rule.

In Sections 50.47 and 50.54 (s) and (t), the alternatives dealth with conditioning the issuance of an operating license or continued operation of a nuclear power plant on the existence of State and local government emergency response plans concurred in by NRC.* The basic difference between alternatives A and B in these sections was that, under alternative A, the proposed rule would require a determination by NRC on issuing a license or permitting continued operation of plants in those cases where relevant State and local emergency response plans had not received NRC concurrence. Denial of a license or shutdown of a reactor would not follow automatically in every case. Under alternative B, shutdown of the reactor would be required automatically if the appropriate State and local emergency response plans had not received NRC concurrence within the prescribed time periods unless an exemption is granted.

After consideration of the public record and on the recommendation of its staff, the Commission has chosen a text for Sections 50.47 and 50.54 (s) and (t) that is similar to, but less restrictive than, alternative A in the proposed rule. Rather than providing for the shutdown of the reactor as the only enforcement action and prescribing specific preconditions for the shutdown remedy, the final rule makes clear that for emergency planning rules, like all other rules, reactor shutdown as outlined in the rule is but one of a number of possible enforcement actions and many factors should be considered in determining whether it is an appropriate action in a given case. This Commission choice is consistent with most of the comments received from State and local

* See Section V for a discussion concerning "concurrence."

governments and is consistent with the provisions of Section 109 of the NRC fiscal year 1980 Authorization Act. Alternative B was seen by some of the commenters as potentially causing unnecessarily harsh economic and social consequences to State and local governments, utilities, and the public.

State and local governments that are directly involved in implementing planning objectives of the rule strongly favor alternative A since it provides for a cooperative effort with State and local governments to reflect their concerns and desires in these rules. This choice is responsive to that effort. In addition, the industry strongly supported alternative A as being the more workable of the two alternatives.

In Appendix E, Sections II.C and III, alternative A would require an applicant/licensee to outline ". . . corrective measures to prevent damage to onsite and offsite property," as well as protective measures for the public. Alternative B addresses only protective measures for the public health and safety. The Commission has chosen alternative B because public health and safety should take clear precedence over actions to protect property. Measures to protect property can be taken on an ad hoc basis as resources become available after an accident.

In Appendix E, under Training, alternative A would provide for a joint licensee, Federal, State, and local government exercise every 3 years, whereas alternative B would provide for these exercises to be performed every 5 years at each site. The Commission has chosen alternative B because the Commission is satisfied that the provision that these exercises be performed every 5 years for each site will allow for an adequate level of preparedness among Federal emergency response agencies. In addition, under these regulations, each licensee is required to exercise annually with local governmental authorities. Furthermore, Federal emergency response agencies may have difficulty supporting exercises every 3 years for all of the nuclear facilities that would be required to comply with these rule changes.

V. Definition of Plan Approval Process

The term "concurrence" has been deleted from the proposed regulations and replaced with reference to the actual procedure and standards that NRC and FEMA have agreed upon and are implementing. According to the agreed upon procedure, FEMA will make a finding and determination as to the adequacy of State and local government emergency response plans. The NRC will determine the adequacy of the licensee emergency response plans. After these two determinations have been made, NRC will make a finding in the licensing process as to the overall and integrated state of preparedness.

It was pointed out to the Commission at the workshops and in public comment letters that the term "concurrence" was confusing and ambiguous. Also, there was a great deal of misunderstanding with the use of the term because, in the past, the obtaining of NRC "concurrence" in State emergency response plans was voluntary on behalf of the States and not a regulatory requirement in the licensing process. Previously too, "concurrence" was statewide rather than site-specific.

VI. Fifteen-Minute Notification

The requirement for the capability for notification of the public within 15 minutes after the State/local authorities have been notified by the licensee has been expanded and clarified. It also has been removed as a footnote and placed in the body of Appendix E. The implementation schedule for this requirement has been extended to July 1, 1981. This extension of time has been adopted because most State and local governments identified to the Commission the difficulty in procuring hardware, contracting for installation, and developing procedures for operating the systems used to implement this requirement.

The Commission is aware that various commenters, largely from the industry, have objected to the nature of the 15-minute notification requirement, indicating that it may be both arbitrary and unworkable.

Among the possible alternatives to this requirement are a longer notification time, a notification time that varies with distance from the facility, or no specified time. In determining what that criterion should be, a line must be drawn somewhere, and the Commission believes that providing as much time as practicable for the taking of protective action is in the interest of public health and safety. The Commission recognizes that this requirement may present a significant financial impact and that the technical basis for this requirement is not without dispute. Moreover, there may never be an accident requiring using the 15-minute notification capability. However, the essential rationale behind emergency planning is to provide additional assurance for the public protection even during such an unexpected event. The 15-minute notification capability requirement is wholly consistent with that rationale.

The Commission recognizes that no single accident scenario should form the basis for choice of notification capability requirements for offsite authorities and for the public. Emergency plans must be developed that will have the flexibility to ensure response to a wide spectrum of accidents. This wide spectrum of potential accidents also reflects on the appropriate use of the offsite notification capability. The use of this notification capability will range from immediate notification of the public (within 15 minutes) to listen to predesignated radio and television stations, to the more likely events where there is substantial time available for the State and local governmental officials to make a judgment whether or not to activate the public notification system.

Any accident involving severe fuel degradation or core melt that results in significant inventories of fission products in the containment would warrant immediate public notification and consideration, based on the particular circumstances, of appropriate protective action because of the potential for leakage of the containment building. In addition, the warning time available for the public to take action may be substantially less than the total time between the original initiating event and the time at which significant radioactive releases take place. Specification of particular times as design objectives for notification of offsite authorities and the public are a means of ensuring that a system will be in place with the capability to notify the public to seek further information by listening to predesignated radio or television stations. The Commission recognizes that not every individual would necessarily be reached by the actual operation of such a system under all conditions of system use. However, the Commission believes that provision of a general alerting system will significantly improve the capability for taking protective actions in the event of an emergency. The reduction of notification times from the several hours required for street-by-street notification to minutes will significantly increase the options available as protective actions under severe accident conditions. These actions could include staying indoors in the case of a release that has already occurred or a precautionary evacuation in the case of a potential release thought to be a few hours away. Accidents that do not result in core melt may also cause relatively quick releases for which protective actions, at least for the public in the immediate plant vicinity, are desirable.

Some comments received on the proposed rule advocated the use of a staged notification system with quick notification required only near the plant. The Commission believes that the capability for quick notification within the entire plume exposure emergency planning zone should be provided but recognizes that some planners may wish to have the option of selectively actuating part of the system during an actual response. Planners should carefully consider the impact of the added decisions that offsite authorities would need to make and the desirability of establishing an official communication link to all residents in the plume exposure emergency planning zone when determining whether to plan for a staged notification capability.

VII. Effective Date of Rules and Other Guidance

Prior to the publication of these amendments, two guidance documents were published for public comment and interim use. These are NUREG–0610, "Draft Emergency Action Level Guidelines for Nuclear Power Plants," (September 1979) and NUREG–0654/FEMA–REP–1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants for Interim Use and Comment," (January 1980). It is expected that versions of these documents, revised on the basis of public comments received, will be issued to assist in defining acceptable levels of preparedness to meet this final regulation. In the interim, these documents should continue to be used as guidance.

VIII. Hearing Procedures Used in Implementation of These Regulations

Should the NRC believe that the overall state of emergency preparedness at and around a licensed facility is such that there is some question whether a facility should be permitted to continue to operate, the Commission may issue an order to the licensee to show cause, pursuant to 10 CFR 2.202, why the plant should not be shut down. This issue may arise, for example, if NRC finds a significant deficiency in a licensee plan or in the overall state of emergency preparedness.

If the NRC decides to issue an order to show cause, it will provide the licensee the opportunity to demonstrate to the Commission's satisfaction, for example, that the alleged deficiencies are not significant for the reactor in question, whether adequate interim compensating actions have been or will be taken promptly, or whether other compelling reasons exist for reactor operation. Finally, pursuant to 10 CFR 2.202(f), the Commission may, in appropriate circumstances, make the order immediately effective, which could result in immediate plant shutdown subject to a later hearing.

IX. Funding

In view of the requirements in these rule changes regarding the actions to be taken in the event State and local government planning and preparedness are or become inadequate, a utility may have an incentive, based on its own self interest as well as its responsibility to provide power, to assist in providing manpower, items of equipment, or other resources that the State and local governments may need but are themselves unable to provide. The Commission believes that in view of the President's Statement of December 7, 1979, giving FEMA the lead role in offsite planning and preparedness, the question of whether the NRC should or could require a utility to contribute to the expenses incurred by State and local governments in upgrading and maintaining their emergency planning and preparedness (and if it is to be required, the mechanics for doing so) is beyond the scope of the present rule change. It should be noted, however, that any direct funding of State or local governments solely for emergency preparedness purposes by the Federal government would come through FEMA.

X. Exercises

On an annual basis, all commercial nuclear power facilities will be required by NRC to exercise their plans; these exercises should involve exercising the appropriate local government plans in support of these facilities. The State may choose to limit its participation in exercises at facilities other than the facility (site) chosen for the annual exercise(s) of the State plan.

Each State and appropriate local government shall annually conduct an exercise jointly with a commercial nuclear power facility. However, States with more than one facility (site) shall schedule exercises such that each individual facility (site) is exercised in conjunction with the State and appropriate local government plans not less than once every 3 years for sites with the plume exposure pathway EPZ partially or wholly within the State, and not less than once every 5 years for sites with the ingestion exposure pathway EPZ partially or wholly within the State. The State shall choose, on a rotational basis, the site(s) at which the required annual exercise(s) is to be conducted; priority shall be given to new facilities seeking an operating license from NRC that have not had an exercise involving the State plan at that facility site.

The Commission has determined under the criteria in 10 CFR Part 51 that an environmental impact statement for the amendments to 10 CFR Part 50 and Appendix E thereof is not required. This determination is based on "Environmental Assessment for Final Changes to 10 CFR Part 50 and Appendix E of 10 CFR Part 50, Emergency Planning Requirements for Nuclear Power Plants" (NUREG–0685, June 1980). Comments on the "Draft Negative Declaration; Finding of No Significant Impact" (45 FR 3913, January 21, 1980) were considered in the preparation of NUREG–0685.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and Sections 552 and 553 of Title 5 of the United States Code, notice is hereby given that the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 50 and 70, are published as a document subject to codification.

45 FR 62789
Published 9/22/80
Effective 10/22/80

10 CFR Part 50

Domestic Licensing of Production and Utilization Facilities; Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending the portion of one of its regulations that provides requirements for leak testing of containment building air locks in order to permit greater flexibility for such testing in the case of frequent use of the air locks.

EFFECTIVE DATE: October 22, 1980.

FOR FURTHER INFORMATION CONTACT: E. G. Arndt, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, DC 20555 (301–443–5997).

SUPPLEMENTARY INFORMATION: On January, 11, 1980, the Nuclear Regulatory Commission published in the **Federal Register** (45 FR 2330) a proposed amendment to its regulation 10 CFR Part 50, "Licensing of Production and Utilization Facilities" which would amend Appendix J, "Primary Reactor

Containment Leakage Testing for Water-Cooled Reactors," with regard to Type B testing requirements. Interested persons were invited to submit written comments by February 25, 1980. Three sets of comments were received. After consideration of the comments received and other factors involved, the Commission has adopted the amendment to Appendix J, 10 CFR Part 50, as published for public comment.

Copies of the comments, an abstract of comments containing staff responses, and the value/impact analysis supporting the rule, are available for public inspection at the Commission's Public Document Room at 1717 H Street, NW., Washington, DC. Single copies may be obtained on request from the Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: E. G. Arndt.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553, title 5 of the United States Code, the following amendment to 10 CFR Part 50 is published as a document subject to codification.

45 FR 76602
Published 11/19/80
Effective 2/19/81

Effective 2/17/81 *

10 CFR Part 50

Fire Protection Program for Operating Nuclear Power Plants

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to require certain provisions for fire protection in operating nuclear power plants. This action is being taken to upgrade fire protection at nuclear power plants licensed to operate prior to January 1, 1979, by requiring resolution of certain contested generic issues in fire protection safety evaluation reports.

EFFECTIVE DATE: February 19, 1981.

Note.—The Nuclear Regulatory Commission has submitted this rule to the Comptroller General for review as may be appropriate under the Federal Reports Act, as amended (44 U.S.C. 3512). The date on which the reporting requirement of this rule becomes effective, unless advised to the contrary, reflects inclusion of the 45-day period that statute allows for such review (44 U.S.C. 3512(c)(2)).

FOR FURTHER INFORMATION CONTACT: David P. Notley, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, phone 301–443–5921 or Robert L. Ferguson, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, phone 301–492–7096.

SUPPLEMENTARY INFORMATION: On May 29, 1980, the Nuclear Regulatory Commission published in the **Federal Register** (45 FR 36082) a notice of proposed rulemaking inviting written suggestions or comments on the proposed rule by June 30, 1980. The notice concerned proposed amendments to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," which would require certain minimum provisions for fire protection in nuclear power plants operating prior to January 1, 1979. Fifty-one comment letters were received regarding the proposed amendments. A number of comments pertained to specific requirements in the proposed Appendix R, and these will be dealt with below. However, there were three substantive contentions which were raised by many of the commenters. These three comments are summarized as follows:

1. Most commenters stated that the 30 day comment period was too short to permit adequate detailed response and that the comment period should have been extended.

The Commission does not agree. The NRC has been developing fire protection requirements since 1975. The NRC published comprehensive fire protection guidelines, Branch Technical Position BTP APCSB 9.5–1, and its Appendix A in 1976. Licensees have compared their fire protection programs against these guidelines and have discussed their deviations from these guidelines with the NRC staff for the past four years during the NRC's fire protection reviews of operating reactors. A Safety Evaluation Report and, in most cases, supplements to the Safety Evaluation Report, have been issued for each operating reactor. These reports describe fire protection alternatives that have been proposed by the licensee and found acceptable by the staff as well as unresolved fire protection issues remaining between the staff and the licensee. Proposed Appendix R provided the Commission's requirements for resolving those issues. Thus, it concerns only a limited number of issues derived from the use of the earlier guides. The Commission believes that a 30-day comment period was adequate under these circumstances.

2. Many licensees questioned the need for backfitting all the requirements of Appendix R. They commented that they had previously complied with staff fire protection recommendations in "good faith" and have committed to or completed certain modifications. They contend that the staff has properly determined that these modifications provide at least the level of fire protection described by the guidance contained in Appendix A to Branch Technical Position BTP APCSB 9.5–1. They also contend that these modifications provide a level of protection at least equivalent to that contained in the proposed rule. They express the concern that the proposed rule was written in such specific language that fire protection issues that were thought closed would be reopened and new, but not necessarily better, modifications would be required. These modifications could be accomplished only by the expenditure of considerable engineering, design, and construction effort and at great undue expense. The commenters request that the requirements in the proposed rule be rewritten to specify only the general requirements of what needs to be accomplished.

These comments raise three related issues. The first relates to the need for specific requirements. The general requirements relating to fire protection are already set forth in General Design Criterion 3 of Appendix A to 10 CFR Part 50 and in the NRC guidance documents. These general provisions gave rise to a number of disputes over whether specific methods adequately accomplished the intended goal. The proposed rule is intended to provide sufficient specific guidance to ensure satisfactory resolution of these issues. Thus, reverting to generalized guidance would not accomplish the intended purpose of the proposed rule.

The second issue involved some instances in which the specific wording used resulted in unnecessary and unintended restrictions. For example, the proposed rule called for a "fresh water" supply. For firefighting purposes, brackish water is satisfactory and a "fresh" water supply is unnecessary. Similarly, the proposed rule called for an "underground" yard fire main loop. Often portions of a fire main loop run above ground in and as they enter structures. The Commission had not intended to prohibit running portions of a fire main loop above ground. Other similar changes are discussed in Section III, "Specific Requirements," of this preamble.

The third issue relates to imposition of requirements on plants with presently installed or with existing commitments to install fire protection features previously determined by the staff to satisfy the guidance of Appendix A to BTP APCSB 9.5–1. The Commission

*Amended 45 FR 79409

generally agrees that, except for three sections that will be back fitted, Appendix R should not be retroactively applied to features that have been previously approved by the NRC staff as satisfying the provisions of Appendix A to BTP APCSB 9.5–1.

The NRC staff had intended, in its original proposal for Appendix R, that the requirements be applicable only for the resolution of unresolved disputed fire protection features. Thus, the staff had not intended the provisions of Appendix R to require modification of previously approved features. This was not clearly described in the proposed rule as published for comment. In fact, the Supplementary information published with the proposed arule explicitly indicated that "[a]ll licensees will be expected to meet the requirements of this rule, in its effective form, including whatever changes result from public comments."

In determining whether the specific requirements of Appendix R should be imposed on licensees with presently installed or existing commitments to install fire protection features previously determined to satisfy Appendix A to Branch Technical Position BTP APCSB 9.5–1, it is important to recognize that Appendix R addresses only a portion of the specific items contained in the more comprehensive document, Branch Technical Position BTP APCSB 9.5–1 and its Appendix A. Appendix A to BTP APCSB 9.5–1 has been the basic fire protection guidance used by the staff in their fire protection reviews conducted for all operating plants during the past several years. For many plants, licensees proposed systems and features that satisfactorily achieved the fire protection criteria set forth in Appendix A to BTP APCSB 9.5–1 and began to promptly implement such features and systems.

Satisfactory features and systems are already in place and in operation in many plants. There is a reasonable degree of uniformity among most of these approved features for all facilities since they were reviewed against the same criteria of Appendix A to BTP APCSB 9.5–1. In general, the features previously approved by the NRC staff in its reviews of fire protection using the criteria of Appendix A to BTP APCSB 9.5–1 provide an equivalent level of fire protection safety to that provided under the specific provisions of Appendix R. Thus, the further benefit that might be provided by requiring that previously approved features be modified to conform to the specific language set forth in Appendix R is outweighed by the overall benefit of the early implementation of such previously approved features, which in many cases are currently being installed.

Nevertheless, as a result of its continuing review of fire protection matters, the NRC staff has indicated to the Commission that there are requirements in three sections in which the protection afforded by Appendix R over and above that previously accepted, may be desirable. The Commission has decided that these requirements should be retroactively applied to all facilities. This decision is not meant to reflect adversely on previous licensee or staff evaluations; rather its purpose is to take fully into account the increased knowledge and experience developed on fire protection matters over the last several years.

The first of these sections is related to fire protection features for ensuring that systems and associated circuits used to achieve and maintain safe shutdown are free from fire damage. Appendix A to BTP APCSB 9.51 permits a combination of fire-retardant coatings and fire detection and supression systems without specifying a physical separation distance to protection redundant systems (Appendix A, D.1(2)), and such arrangements were accepted in some early fire protection reviews. As a result of some separate effects tests, the staff changed its position on this configuration, and subsequent plans have been required to provide additional protection in the form of fire barriers or substantial physical separation for safe shutdown systems. No credit for such coatings as fire barriers is allowed by Section III.G of Appendix R. Appendix A to Branch Technical Position BTP APCSB 9.5.1 and the proposed Appendix R recognized that there were plant-unique configurations that required fire protection features that are not identical to those listed in Section III.G of Appendix R. For these cases, fire protection features were developed by the licensee and described in a fire hazards analysis. Some of these arrangements were accepted by the staff as providing equivalent protection to the requirements of Section III.G to Appendix R.

Requirements that account for all of the parameters that are important to fire protection and consistent with safety requirements for all plant-unique configurations have not been developed. In light of the experience gained in fire protection evaluations over the past four years, the Commission believes that the licensees should reexamine those previously approved configurations of fire protection that do not meet the requirements as specified in Section III.G to Appendix R. Based on this reexamination the licensee must either meet the requirements of Section III.G of Appendix R or apply for an exemption that justifies alternatives by a fire hazard analysis. However, based on present information, the Commission does not expect to be able to approve exemptions for fire-retardant coatings used as fire barriers.

The second relates to emergency lighting. Section III.J of Appendix R calls for 8-hour emergency lighting, whereas in some cases less than 8-hour emergency lighting has been accepted as satisfying Appendix A to BTP APCSB 9.5–1. While an adequate level of safety may be provided by less than an 8-hour supply, an 8-hour system would provide added protection and would generally involve only a small cost. The Commission therefore believes that licensees should upgrade the previously approved facilities to satisfy the 8-hour lighting requirement of Appendix R.

The third relates to protection against fires in noninerted containments involving reactor coolant pump lubrication oil (Section III.O of Appendix R). The proposed rule permitted either an oil collection system or a fire suppression system. The staff has also accepted an automatic fire suppression system as an acceptable method of fire protection for this application. The Commission has concluded that fire suppression systems do not give adequate protection for fires that may be induced by seismic events. The Commission therefore believes that previously approved suppression systems should be replaced with oil collection systems that can withstand seismic events.

The technical basis on which these three sections are based are further discussed in Section III, "Specific Requirements," of this preamble.

3. Most commenters stated that the implementation schedule contained in the proposed rule is impossible to meet for any of the operating plants. The commenters further stated that if the implementation schedule in the effective rule is the same as that in the proposed rule, the Commission must be prepared to either shutdown each operating nuclear power plant, or process exemption requests.

The commenters then concluded that the implementation schedule should be rewritten to allow an adequate time priod for compliance. The proposed rule stated that "all fire protection and modifications identified by the staff as necessary to satisfy Criterion 3 of Appendix A to this part, whether contained in Appendix R to this part or in other staff fire protection guidance (except for alternate or dedicated shutdown capability) shall be completed by November 1, 1980 unless, for good cause shown, the Commission approves an extension," (proposed paragraph 50.48 1.(c)). The Commission went on to

state its intention in the Statement of Consideration to the rule that ". . . no plant would be allowed to continue to operate after November 1, 1980, or beyond an extended date approved by the Comission, unless all modifications (except for alternate or dedicated shutdown capability) have been implemented."

The Commission has reconsidered the implementation schedule and has determined that it should be modified for the following reasons:

• After reviewing the comments and the information developed as a result of completion of fire reviews over the past 6 months, the staff has informed the Commission that the date of November 1, 1980, is not possible because the effective date of the rule will be after that date.

• The staff has informed the Commission that it would expect virtually all licensees to request exemptions if the new implementation dates do not provide an appropriate period of time for complying with the requirements of Appendix R. The time and manpower resources needed by the licensees to prepare such requests and by the staff to formulate recommendations on these requests is not warranted from the standpoint of timely fire protection improvement.

• The revised implementation schedule provides a careful balance of these considerations, calling for the remaining fire protection modifications to be implemented and installed on a phased schedule that is as prompt as can be reasonably achieved.

The revised schedules distinguish between requirements imposed for the first time on the licensee by Appendix R and those requirements already imposed in license conditions or Technical Specifications issued prior to the effective date of the rule. For requirements imposed by Appendix R, including the items "backfit" to all plants, the schedule provides a reasonable time after publication of the rule for completion of required modifications. For requirements already imposed by license conditions providing for implemention after November 1, 1980, the Commission has reviewed these schedules and has found that in some instances the allotted time for completion of the required modifications may be excessive. Thus, for fire protection features other than those covered by Appendix R, although the Commission has extended the compliance dates beyond the November 1, 1980, date in the proposed rule, the Commission has added a requirement that limits the compliance schedule in existing licenses if such schedules extend beyond what we now believe should have been a reasonable schedule initially. Relief from such limitation may be granted by the Director of Nuclear Reactor Regulation upon a showing that there is good cause for extending such date and that public health and safety is not adversely affected by such extension.

It should also be noted that for licensees whose license conditions imposed a schedule with a compliance date of November 1, 1980, or other date prior to the effective date of § 50.48, the Commission has suspended such compliance dates by promulgating on October 29, 1980, a temporary rule § 50.48 (45 FR 71509), which will be superseded by this rule.

To better understand the nature of the public comments received and the staff's resolution of these comments, the following section will consider each section of Appendix R to this part. In Section III, we provide a summary of the Technical Basis for each requirement, followed by a summary of the public comments and a statement of the staff's disposition of those comments.

Section I. Introduction and Scope

This section has been revised as a result of comments to include a discussion of the importance of safe shutdown capability and the distinction between requirements for "safety-related" equipment and equipment needed for "safe shutdown."

Section II. General Requirements

This section has been substantially rewritten as a result of comments to provide a concise summary of general requirements. The specific requirements were consolidated with the appropriate parts of Section III, "Specific Requirements," except that the credit given for 50-foot separation has been dropped.

Section III. Specific Requirements

The requirements in this rule are based upon principles long accepted within that portion of American industry that has been classified by their insurance carriers as "Improved Risk" or "Highly Protected Risk". In each of these cases, the Commission has decided that the overall interest of public safety is best served by establishing some conservative level of fire protection and ensuring that level of compliance exists at all plants. The following is a list of the specific technical bases and resolution of public comments for each of the specific requirements in Appendix R.

A. *Water Supplies for Fire Suppression Systems Technical Basis.* One of the basic fire protection requirements for a modern industrial site in the United States is a separate water distribution system for fire protection with dual water supplies. Duplicate water supplies are required to ensure uninterrupted fire suppression capability allowing for single failures and periodic maintenance and repair of vital portions of the systems. Duplicate water supplies may consist of separate suctions for fire pumps from a large body of water such as lake, river, or pond or from two water storage tanks.

For nuclear power plants, the distribution system is required to consist of a loop around the plant with suitable valves for isolating portions of the system for maintenance or repair without interrupting the water supply to the various fire suppression systems in the plant. Thus, with dual supplies and a loop concept, an adequate water supply can be ensured to each manual or automatic water suppression system throughout the plant.

An ensured minimum volume of water is set aside and dedicated for fire protection uses to be available at all times regardless of other simultaneous water uses in the plant. This water volume is dedicated for fire service by means of separate storage tanks or separate pump suctions from a large body of water. When common tankage is employed for fire service needs and other water services, the fire pump suctions must be at the bottom of the tank and other water supply suctions must be located at a higher level to ensure that the minimum dedicated water volume is set aside for fire protection needs. Administrative controls by themselves, such as locked valves to ensure adequate water supply for fire fighting needs, are deemed unacceptable at nuclear power plants.

Comment Resolution

Many commenters stated that we were being too restrictive by stipulating an underground yard fire main loop and fresh water supplies. Our intent was only that a yard fire main loop be furnished. We have deleted the specification for an underground loop since special conditions may dictate that part of the loop be above ground or inside safety-related buildings. Such arrangements are acceptable.

With regard to the specification for a fresh water supply, the staff was attempting to avoid potential plant problems that are not associated with fire protection. From a fire protection standpoint, salt or brackish water is acceptable for fire suppression provided the fire protection system is designed and maintained for salt or brackish water. The requirement for fresh water supplies is therefore dropped. Other operational problems unrelated to fire protection that may result from the use of salt or brackish water for fire suppression activities are outside the

scope of this regulation.

Several commenters took issue with the requirement for two separate redundant suctions, stating that some plants use a single large intake structure on a lake or a river for all water requirements. The requirement for separate intake structures was not intended and the rule has been clarified.

Several comments called for deleting the requirements for dedicated tanks or use of vertical standpipe for other water services when storage tanks are used for combined service-water/fire-water uses, on the basis that this is overly restrictive and other ways are available to ensure a dedicated supply such as weirs, suction location, etc. Two separate but related issues are involved here. The first is the requirement for dedicated water storage tanks for fire fighting purposes. The suggestion that the requirement for dedicated tanks be deleted was rejected for the reasons stated in the preceding Technical Basis.

The other point deals with ensuring minimum water storage capacity for fire suppression activities when storage tanks are used for combined service-water/fire-water uses. The term "vertical standpipe for other water service" simply means that the suction for other water uses in common storage tanks will be located sufficiently high to ensure the minimum water volume needs for fire suppression activities. If the commenters were assuming that "vertical standpipe" referred only to pipes inside the tank, this is not the case. In fact a standpipe exterior to the storage tank is more desirable since any leakage would be immediately evident. On an internal standpipe a leak in the pipe could actually allow depletion of the water otherwise to be reserved for fire uses. The rule has been clarified to allow physical alternatives for water supply dedication but to preclude exclusive use of administrative controls for this purpose.

Some commenters objected to the requirement that other water systems used as a backup water supply for fire protection should be permanently connected to the fire main system and suggested that it would be sufficient to provide a water supply capable of being connected to the fire main system within ten minutes of the loss of normal water supply or pumps. The rule does not address backup water supplies. The requirement means that, if another water system is used as one of the redundant water supplies, it must satisfy all of the requirements of the fire protection water supplies. Additional backup supplies need not meet these requirements.

One commenter asked why only a two-hour water supply is required when the Browns Ferry Fire lasted well over two hours. All of the investigations of the Browns Ferry Fire clearly show that if water had been used immediately, the fire would have been extinguished much earlier. Indeed once the manual fire fighting activities were started with the use of only one fire hose stream, the fire was extinguished within one-half hour. The staff would find unacceptable any condition in which a postulated fire that could threaten safe shutdown capability could not be controlled and extinguished within two hours with any combination of manual and automatic fire suppression activities. Therefore, a two-hour water supply is considered adequate. It should also be noted that this minimum dedicated water volume is based on maximum flow rates. Since most fires are controlled and extinguished with much smaller flow rates, this requirement realistically represents a dedicated water volume far in excess of two hours.

B. *Sectional Isolation Valves.*

C. *Hydrant Isolation Valves Technical Basis.* These two requirements are similar and can be treated together. Proper valving is required to isolate portions of the water distribution system for maintenance or repair without interrupting the water supply to manual or automatic fire suppression systems inside the plant. Valves are similarly required to permit isolation of outside yard hydrants from the water distribution system for maintenance or repair without interrupting water supply to fire suppression systems inside the plant. Visually indicating valves such as post indicator valves are preferred so that the position of the valve can be readily determined. However, key-operated valves (commonly known as curb valves) are acceptable for these purposes where plant-specific conditions warrant their use.

B. *Section Control Valves—Comment Resolution.* Many commenters stated that the requirement for "approved visually indicating" sectional control valves was overly restrictive, unnecessary, and not specific with respect to who should give the approval. The Commission has accepted this suggestion; the rule now requires that sectional control valves shall be provided to isolate portions of the fire main for maintenance or repair without shutting off the entire system. Post indicator or key-operated valves are mentioned as two examples of acceptable valves.

C. *Hydrant Block Valves—Comment Resolution.* A number of commenters made suggestions for rewording this section. This section has been clarified to state the requirement for capability to isolate hydrants from the fire main without disrupting the water supply to automatic or manual fire suppression systems in any area containing or presenting a fire hazard to safety-related or safe shutdown equipment.

One commenter suggested that this requirement be dropped in its entirety since it "is a new requirement which has not been subjected to the peer review process." This suggestion was rejected on the basis that Appendix A to BTP APCSB 9.5–1 contains the following sentence: "The lateral to each hydrant from the yard main should be controlled by a visually indicating or key-operated (curb) valve," and there was an opportunity to comment on this document.

D. *Manual Fire Suppression Technical Basis.* Considerable reliance is placed on automatic fire suppression systems throughout a nuclear power plant. However, manual fire fighting activities often can control and extinguish slowly developing fires before an automatic fire suppression system is actuated. In addition, fires that are controlled or extinguished by automatic systems require a certain amount of manual response. Also, some areas of the plant do not warrant the installation of automatic fire suppression systems. Manual response is the only fire suppression available for these areas; thus, it is important that manual fire fighting capability be present in all areas of the plant, and that standpipe and hose stations be located throughout the plant. The standpipe and hose stations are to be located so that at least one effective hose stream can be brought to bear at any location in the plant containing or presenting a hazard to structures, systems, or components important to safety. They are to be supplied from the fire water supply system except for those inside containment, which may be connected to other reliable water supplies if a separate penetration into containment cannot be made for fire water service needs.

Comment Resolution

Several commenters suggested adding a sentence reading "Standpipe and hose stations are not required if sufficient justification can be provided that adequate fire protection features have been provided to account for a given fire area." This suggestion was rejected. The staff has taken the position that the minimum requirements are that at least one effective hose stream that will be able to reach any location that contains or could present an exposure fire hazard to the safety-related equipment. The Commission concluded that no analyses can identify hazards so carefully that this minimum requirement can be

further reduced.

E. *Hydrostatic Hose Test Technical Basis.* Fire hoses should be hydrostatically tested periodically to ensure that they will not rupture during use. The requirement for a minimum test pressure of 300 psi comes from NFPA 1962-1979 (National Fire Protection Association Standard for Care, Use and Maintenance of Fire Hose Including Connections and Nozzles, 1979 Edition of NFPA 1962),* a nationally recognized consensus standard. This standard contains other guidance for the use and care of fire hose that most industries find useful.

Comment Resolution

Many commenters pointed out the erroneous usage of the term "service pressure" rather than "operating pressure" in this requirement. The intended meaning for this requirement is that all hoses would be tested at a pressure greater than the maximum pressure found in the fire protection water distribution systems. The correct terminology is "operating pressure." The rule has been so changed. In addition, the staff added a specific minimum test pressure requirement of 300 psi to meet the NFPA standard.

One commenter also pointed out that hoses should be inspected for mildew, rot, cuts, or other damage. Although this is a valid comment, it is not an unresolved issue with any licensee so it need not be covered by this rule. In addition, such inspections are already being performed in accordance with the plant's Technical Specificaitons.

F. *Automatic Fire Detection Technical Basis.* The requirement that automatic fire detection systems be installed in all areas that contain safe shutdown or safety-related systems or components follows generally accepted fire protection practice. Installation of such fire detection capability is independent of any requirements for automatic or manual fire suppression capability in an area. The purpose of these detection systems is to give early warning of fire conditions in an area so that the fire brigade can initiate prompt actions to minimize fire damage within the plant.

Comment Resolution

Many commenters suggested that the words "automatic fire detection capability" be substituted for "automatic fire detection systems" on the basis that, as worded, the requirements are too limiting. They stated that an automatic sprinkler system with appropriate alarm check valves and central alarm features provides acceptable detection/alarming capability. Several commenters claimed that a separate detection system is not needed in areas covered by sprinkler systems equipped with fusible link sprinkler heads. A fusible link has a time delay before it actuates. However, more importantly, a smoldering localized fire that could do damage may not generate enough heat to melt the fusible link. While we do not disagree that the alarm from an automatic fire suppression system serves as notification that a fire exists, we concluded that the minimum requirement for a separate fire detection system in all such areas should be retained. The fire hazards analysis may call for a separate suppression system, but this would be in addition to the fire detection system.

G. *Protection of Safe Shutdown Capability Technical Basis.* The objective for the protection of safe shutdown capability is to ensure that at least one means of achieving and maintaining safe shutdown conditions will remain available during and after any postulated fire in the plant. Because it is not possible to predict the specific conditions under which fires may occur and propagate, the design basis protective features are specified rather than the design basis fire. Three different means for protecting the safe shutdown capability outside of containment are acceptable. The first means is separation of redundant safe shutdown trains and associated circuits by means of 3-hour fire rated barriers. The second means is a combination of separation of redundant safe shutdown trains and associated circuits by a 1-hour fire rated barrier and automatic fire suppression and detection capability for both redundant trains. The third means, which may be used only when redundant trains and associated circuits are separated by 20 feet or more of clear space, requires automatic fire suppression and detection systems in the area. An alternative or dedicated safe shutdown capability independent of the fire area is required if fire protection for safe shutdown capability cannot be provided as outlined above. For cables and equipment needed for safe shutdown located inside of noninerted containments, a lesser degree of fire protection is permitted because transient exposure fires are less likely inside containment during plant operation. Section III.M, "Fire Barriers," discusses the technical basis for the 3-hour barrier, and Section III.L, "Alternative and Dedicated Shutdown Capability," discusses the technical basis for safe shutdown capability.

Comment Resolution

Many commenters suggested that the first paragraph be changed slightly and the rest of this section deleted. The basis for their contention is that the rule should state simply the requirement to protect cables or equipment of systems necessary for safe shutdown of the plant and leave specific implementation details in some other type of document.

We have modified this section by removing the listing of considerations, deleting Table I, and revising the wording to provide clarification.

H. *Fire Brigade.*

I. *Fire Brigade Training Technical Basis.* Most modern industrial plants with replacement cost values approaching those of a modern nuclear powered electric generating station have a full-time fully equipped fire department, including motorized fire apparatus. Because of the reduced severity of fire hazards in a nuclear generating station as compared to a manufacturing plant, the Commission believes that it is not necessary to mandate a fully staffed fire department. However, manual fire response capability is required at a nuclear plant and a properly equipped and fully trained fire brigade will satisfy this need. The Commission has determined that a brigade of five persons constitutes the minimum size sufficient to perform the actions that may be required by the brigade during the fire and to provide some margin for unanticipated events.[1] Similarly, the training requirements listed are considered the minimum needed to ensure that the fire brigade will be able to function effectively during a fire emergency.

The proposed rule required emergency breathing apparatus without specifying the number of such pieces of apparatus. The rule has been modified to specify the personnel for whom such apparatus is to be provided and to specify reserve air requirements.

H. *Fire Brigade—Comment Resolution.* Many commenters suggested changing this requirement to a simple statement that a trained and equipped, nominal size, site fire brigade of five persons be provided on each shift unless a lesser number is justified. This recommended change was rejected by the Commission for the reasons stated in the Technical Basis.

Some commenters objected to the exclusion of the shift supervisor from the fire brigade. The commenters felt that the shift supervisor should go to the fire and provide the benefit of his expertise and authority. The rule would not prevent this. However, the shift supervisor may have to go elsewhere during the course of a fire that adversely

*Correction 46 FR 44734

[1] This is discussed at length in the NRC staff's "Evaluation of Minimum Fire Brigade Shift Size", dated June 8, 1979; copies are available from David P. Notley, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

affects plant operation. The fire brigade leader must stay with the fire brigade and be assigned no other responsibilities during a fire emergency, therefore, the shift supervisor must be excluded from membership on the fire brigade.

I. *Fire Brigade Training—Comment Resolution.* Many commenters have stated that NRC used unnecessary detail in spelling out specific requirements for classroom instruction, fire fighting practice, and fire drills. Some commenters felt that these requirements were more detailed than anything the Commission has published with regard to operator training. The Commission here points out that most of the investigations of the TMI accident identified inadequately trained operators as an important factor and that work is now being done in this area. The fact is not that the training requirements spelled out here for the fire brigade members are excessive when compared to training requirements for reactor operators, but that fire brigade training is further along in development, and training parameters that are essential to a comprehensive program have been identified.

J. *Emergency Lighting Technical Basis.* Emergency lighting is required in all nuclear power plants. Battery-powered lights with capacities of 1½ to 2 hours is usually sufficient for emergency egress. However, the postfire emergency lighting requirements in a nuclear power plant are of a different kind. The need is for lighting that aids the access to equipment and components that must be manually operated by plant personnel to effect safe plant shutdown during plant emergencies. Because such activities may extend over a considerable period of time both during and after the fire, it is prudent to provide 8-hour battery emergency lighting capability to allow sufficient time for normal lighting to be restored with a margin for unanticipated events.

Comment Resolution

Many commenters stated that the requirement for emergency lighting is overly restrictive in three specifics: first, that emergency lighting is unnecessary in many of the designated areas; second, that the requirement for sealed beam or fluorescent units is overly restrictive; third, that the requirement for individual 8-hour battery power supply is excessive. Three commenters recommended a 2-hour battery power supply; five commenters recommended a plant-specific power supply; and one commenter recommended that there be no permanent installation.

These suggestions have been accepted in part. Lighting units with 8-hour battery supplies are to be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto. The reasoning behind the requirement for an 8-hour battery power supply is that there can be a great deal of other activity during a fire emergency and operators involved in safe plant shutdown should not also have to be concerned with lighting in the area. The small cost differential between 2-hour supply and the substantial additional protection afforded by the 8-hour supply does not warrant reducing this requirement. The Commission has decided to require an 8-hour battery power supply in all areas needed for operation of safe shutdown equipment and in access and egress routes.

K. *Administrative Controls Technical Basis.* The fire protection program uses administrative controls for fire prevention and prefire planning. The items listed in this section are generally accepted within the fire protection community as minimum requirements for an effective administration of the fire protection program. Controls are placed on the storage and use of combustible materials to reduce the fire loading in safety-related areas and on ignition sources to avoid careless operations. Procedures are used to control actions to be taken by individuals who discover a fire and by the fire brigade for the development of preplanned fire fighting strategies and actual fire fighting techniques.

Comment Resolution

Many commenters stated that this requirement was much too detailed for a regulation. Some stated that the requirements should apply only to those areas having safe shutdown equipment. Other commenters stated that a simple statement that administrative procedures should be established to control the various fire hazards throughout the plant was sufficient, and that the details could be spelled out in a regulatory guide or some other similar document.

Minor changes have been made in the wording of this requirement for clarification.

L. *Alternative and Dedicated Shutdown Capability.*

Technical Basis. In some locations (such as the cable spreading room) within operating nuclear power plants, it is not always possible or practicable to protect redundant safe shutdown systems against adverse effects of fire or fire suppression activities only through the use of fire protection features because the redundant safe shutdown systems in a given fire area are too close to each other. Alternative shutdown capability has usually been required to be independent of the control room, cable spreading room, switchgear rooms and cable riser areas because redundant systems in these areas are not adequately separated. When plant modifications to provide alternative shutdown systems are extensive, a dedicated system that is essentially a minimum capability safe shutdown train and is independent of those already existing may be provided. This minimum capability is required to maintain the process variables within those values predicted for a loss of offsite power. The case of loss of offsite power is assumed because fires in certain circumstances (e.g., electrical distribution systems) could cause or be related to such a loss. Fire damage to cold shutdown capability is limited to damage that can be repaired within 72 hours to provide a margin in achieving cold shutdown conditions. Consideration is given to associated circuits because most plants were not designed with this concept in mind. Should either the alternative or dedicated capability be required to function because of a fire, it must not be disabled by fire damage to associated circuits. Also, this capability does not have to meet the single failure criterion because it is only one of several levels of defense. Seismic Category I criteria is not imposed because fires that would require the installation of alternative or dedicated shutdown capability are not seismically induced.

Comment Resolution

Many of the commenters stated that this requirement exceeded the scope of Appendix R by defining alternative shutdown requirements. They stated that the time requirements are excessive and should be dropped. They also contend that this regulation does not take into account the many plant reviews being conducted under the Systematic Evaluation Program (SEP).

It is generally understood that cold shutdown is the ultimate safe shutdown condition and that, for each fire area, different means may be used and may be necessary to achieve cold shutdown. Because a fire in certain areas at some plants would have the capability of disabling systems required to achieve both hot and cold shutdown, it is necessary to specify the minimum capability and time requirement for each condition necessary to achieve safe shutdown. We agree that evaluations being made under the Systematic Evaluation Program (SEP) may also call for alternative or dedicated shutdown capability for reasons other than fire protection. For example, seismic, flooding, or emergency core cooling requirements resulting from the SEP may require additional modifications. Each licensee should be aware of the status of

the SEP so that the requirements resulting from SEP can be effectively integrated with those relating to fire protection to the extent possible. However, the Commission has decided that the modifications required to complete the fire protection program should not be deferred until the SEP review is completed.

M. *Fire Barriers.*

Technical Basis. The best fire protection for redundant trains of safe shutdown systems is separation by unpierced fire barriers—walls and ceiling-floor assemblies. Because these barriers are passive fire protection features, they are inherently reliable provided they are properly installed and maintained. Fire barriers have been used successfully for many years to subdivide large potential fire losses into smaller, more acceptable risks. Even fire barriers with openings have successfully interrupted the progress of many fires provided the openings were properly protected by fire doors or other acceptable means.

Fire barriers are "rated" for fire resistance by being exposed to a "standard test fire". This standard test fire is defined by the American Society for Testing and Materials in ASTN E–119, "Standard for Fire Resistance of Building Materials." Fire barriers are commonly rated as having a fire resistance of from 1 to 8 hours. Most "Improved Risk" or "Highly Protected Risk" (as classified by insurance carriers) industrial properties in the United States require fire barriers to have a resistance rating of 2 to 4 hours.

While a nuclear power plant has a low fire load, the potential consequences of fire are serious. Therefore, the Commission has selected 3 hours * as an acceptable minimum fire resistance rating for fire barriers separating redundant trains for safe shutdown systems. This will give ample time for automatic and manual fire suppression activities to control any potential fire and for safe shutdown activities to properly control the reactor. Many operating plants, or plants that are already built but that are not yet operating, have both trains of safe shutdown equipment located in close proximity and a single fire could damage or destroy the functional capability of both redundant trains. If specific plant conditions preclude the installation of a 3-hour fire barrier to separate the redundant trains, a 1-hour fire barrier and automatic fire suppression system for each redundant train will be considered the equivalent of 3-hour barrier.

If the 1-hour fire barrier and automatic fire suppression for each redundant train cannot be provided because of plant-specific conditions, alternative or dedicated shutdowns capability will be required to ensure safe shutdown capability. The use of a 1-hour barrier in conjunction with automatic fire suppression and detection capability for each redundant train of safe shutdown equipment is based on the following considerations. Automatic suppression is required to ensure prompt, effective application of suppressant to a fire that could endanger safe shutdown capability. The activation of an automatic fire detection or suppression system does not occur until sufficient smoke or heat has been developed by the fire. Therefore, the Commission is requiring a 1-hour barrier to ensure that fire damage will be limited to one train until the fire is extinguished.

These requirements have now been incorporated in Section III.G, "Fire Protection of Safety Functions."

Comment Resolution

Several commenters made a number of suggestions of an editorial nature. One suggestion was to add "or unless other fire protection features have been provided to ensure equivalent protection" in the first paragraph, where three-hour rated fire barriers were stipulated unless a lower rating was justified by the fire hazards analysis. The Commission feels that this adds nothing in the way of clarification and the suggestion was not adopted. The second paragraph requires that structural steel forming a part of or supporting any fire barrier have a fire resistance equivalent to that required of the barrier. An example was given of metal lath and plaster covering as being one means of providing equivalent protection. Several commenters stated that they thought this was too narrow and would be interpreted by some people as the only acceptable method permitted. Since the example seemed to be confusing, a decision has been made to eliminate it. Other comments to the effect that the requirement was excessively restrictive with regard to fire barrier penetrations, including fire doors and their associated frames and hardware, and ventilation systems have been acted upon by the staff and the requirement, as it had affected these items, was deleted.

N. *Fire Barrier Cable Penetration Seal Qualification.*

Technical Basis. Unpierced fire barriers offer the best protection for separating redundant trains of safety-related or safe shutdown equipment. However, these barriers must be pierced for both control and power cables. These penetrations must be sealed to achieve a degree of fire resistance equivalent to that required of the barrier that is pierced. ASTM Standard E–119 is the national consensus standard used for testing and rating these cable penetration seals. Since the cables conduct the heat through the barrier, and since the cable insulation is combustible, the acceptance criteria of the ASTM Standard E–119 relating to temperature on the unexposed side must be appropriately modified.

Comment Resolution

Some commenters suggested that this entire section be deleted and replaced with the following two sentences: "Penetration seals shall provide the equivalent protection which is required of the fire barrier. Evaluation of the penetration seals based upon a design review and relevant test data or qualification tests may be made." The commenters felt that sufficient test data are available to permit evaluation of design requirements without full-scale mockup testing and that many of the items spelled out in the regulation, such as the water hose stream test, were too detailed and did not belong in the regulation. The Commission has reconsidered this issue and revised the rule to (a) require the use of noncombustible materials only in the construction of fire barrier penetration seals, (b) require fire barrier penetration seals to be qualified by test; and (c) require such tests to satisfy certain acceptance criteria.

O. *Fire Doors.*

Technical Basis. Door openings in fire walls constitute another breach that must be protected. Fire doors that have been tested and rated for certain fire exposures are installed to protect these openings. Fire doors frequently fail to protect the openings in which they are installed because they are not fully closed. Various methods are available to licensees to ensure that fire doors are in proper operating condition and that they will be closed during a fire. These options are listed in Appendix R.

Comment Resolution

Many commenters stated that this requirement is too detailed and should be deleted. Minor editorial changes have been made in order to more clearly state the requirements.

P. *Reactor Coolant Pump Lubrication System.*

Technical Basis. Each reactor coolant pump motor assembly typically contains 140 to 220 gallons of lube oil. Oil leaking from some portions of the lube oil system may come in contact with surfaces that are hot enough to ignite the oil. The resulting fire could be large, and access to the fire would be delayed because of the time required to enter the containment. Containent air temperature

*Correction 46 FR 44734

would increase, severe localized environments would develop in the area of the fire, and a large amount of smoke would be generated. These conditions could affect operability of safety-related equipment inside containment. Therefore, an oil collection system is necessary to confine any oil discharged due to leadkage or failure of the lubrication system and to prevent it from becoming a fire hazard by draining it to a safe location. These occurrences could be random or could be seismically induced because the existing lube oil system piping and oil collection systems may not be designed to withstand a design basis seimic event.

Appendix A to BTP APCSB 9.5–1 states that for operating plants, "postulated fires or fire protection system failures need not be considered concurrent with other plant accidents or the most severe natural phenomena." The basis for that statement is two fold. First, nuclear power plants are massive structures, and essential services are designed to withstand earthquakes and other natural phenomena. Second, the history of many fires associated with recent earthquakes have been evaluated. These evaluations showed that such fires usually are due to failure of piping or tanks of flammable gasses or liquids such as municipal natural gas distribution systems or gasoline storage and/or dispensing stations. Where such potential fire hazards exist in nuclear power plants (e.g., hydrogen for generator cooling, or oil fuel for the emergency diesel generator or station space heating boilers) they are designed and installed to withstand the damaging effects of various natural phenomena, and other special fire protection features are provided as necessary. However, General Design Criterion 2 *Design Bases for Protection Against Natural Phenomena* requires that structures, systems, and components important to safety be designed to withstand the effects of earthquakes without loss of capability to perform their safety function. Regulatory Guide 1.29, "Seismic Design Classification," describes an acceptable method for identifying and classifying those features of light-water-cooled nuclear power plants that should be designed to withstand the effects of the Safe Shutdown Earthquake. In this guide, paragraph C.1 applies to systems that are required to remain functional to ensure heat removal capability; paragraph C.2 applies to systems that do not have to remain frunctional for that purpose, but whose failure could reduce the functioning of those systems covered by paragraph C.1. The reactor coolant pump oil collection system is covered by paragraph C.2 because its function is required to protect safety-related systems rather than to perform a safety function. Because the failure of the oil collection system for a seismically induced oil fire should not prevent a safety-related system from performing its safety function (Regulatory Guide 1.29, "Seismic Design Classification," paragraph C.2), the oil collection system should be designed, engineered, and installed so that its failure will not lead to a fire affecting safety-related equipment as a result of an earthquake.

The proposed rule permitted two alternatives—an oil collection system or an automatic fire suppression system. We have deleted the alternative of the suppression system because unacceptable damage may result to the safety-related systems from the burning of oil before the suppression system is actuated and because the fire water supply system is not designed to withstand seismic events. In addition, these pumps are located within the biological shield inside containment, therefore, timely fire brigade action would be difficult if the suppression system malfunctions. Further, if the suppression system becomes inoperable during operation, a fire watch or patrol cannot enter the area during operation.

Comment Resolution

A number of commenters suggested that this section is too detailed and should be substantially modified. This requirement was changed to delete the option of protecting the reactor coolant pump lubrication system with an automatic fire suppression system. We have modified the rule to indicate that the requirement that the oil collection system be designed to provide reasonable assurance that it will withstand the Safe Shutdown Earthquake can be met by satisfying paragraph C.2. of Regulatory Guide 1.29, "Seismic Design Classification," as described above.

Q. *Associated Circuits.*

Technical Basis. When considering the consequences of a fire in a given fire area during the evaluation of safe shutdown capabilities of a plant, the staff must be able to conclude that one train of equipment that can be used immediately to bring the reactor to a hot shutdown condition remains unaffected by that fire. The staff must also be able to conclude that damage to one train of equipment used for achieving cold shutdown will be limited so that the equipment can be returned to an operable condition within 72 hours. (See Technical Basis for Section III.G, "Protection of Safe Shutdown Capability.") In the fire hazards analysis for a plant, the equipment relied upon to perform both functions must be identified for each fire area. It follows that any associated non-safety circuits in the fire area that could adversely affect the identified shutdown equipment by feeding back potentially disabling conditions (e.g., hot shorts or shorts to ground) to the power supplies or control circuits of that equipment must also be evaluated. Of course such disabling conditions must be prevented to provide assurance that the identified safe shutdown equipment will function as designed. These requirements have now been incorporated in Section III.L, "Alternative and Dedicated Shutdown Capability."

Comment Resolution

Many commenters stated that this requirement should be deleted because many older plant designs did not consider associated circuits and this is, therefore, a new design requirement. The commenters felt that the analysis that will be required to satisfy this requirement will be both long and complicated and the requirement should therefore be deleted.

The Commission rejected these suggestions for the following reasons.

1. Virtually all of the fire protection modifications made to date have been required to correct deficiencies that resulted from lack of consideration of certain specific items during initial design and construction.

2. The Browns Ferry fire showed the necessity of divisional separation of the associated circuit of the control cables to prevent the disabling of safety systems by a single fire. This has been discussed with licensees during evaluations of alternative and dedicated shutdown capability and is necessary to ensure that safe shutdown systems will be able to function properly in the event of fire.

3. The staff considers incomplete any fire hazard analysis that does not consider the effects of fire damage to circuits that are associated with safe shutdown systems.

As indicated above, as a result of the comments received on this issue, it is unclear that associated circuits have in fact been adequately considered by licensees in their reviews using the guidance of Appendix A to BTP APCSB 9.5–1. To ensure that the associated circuits are considered, all operating nuclear power plants will be required to meet the requirements of Section III.G of Appendix R.

General Comments Resolution:

Several commenters contended that Commission regulations mandate that an adjudicatory hearing be conducted prior to a final decision. One commenter labeled the regulation an "order" within the meaning of the Administrative Procedure Act (5 U.S.C. 551(6)) (APA) and asserted that 10 CFR 2.204 of the Commission's regulations, "Order for Modification of License," applies to this rulemaking proceeding.

The Commission disagrees with these comments. A "rule" is defined in the APA to mean "the whole or a part of an agency statement of general or particular applicability and future effect designed to implement * * * or prescribe law or policy * * *" (5 U.S.C. 551(4)). The agency action questioned here is clearly one that treats similarly situated licensees equally and that prescribes future conduct or requirements. For those licensees who have not already provided an equivalent level of fire protection, certain specific fire protection features are required. Various of these requirements would apply to approximately 40 facilities. The commenter's characterization of the rule as an order, along with the assertion that 10 CFR 2.204 mandates a hearing before the rule becomes final is incorrect. On its face, that regulation (which does grant a hearing right) applies only to Commission orders that modify a license.[2] It does not apply to requirements promulgated through a rulemaking action conducted in accordance with the requirements of applicable law.

Several commenters contended that the environmental impact had not been adequately addressed. One commenter, citing the requirements in Section III.A of Appendix R for two water supplies and two separate redundant sections as examples of requirements involving environmental issues, contended that the Commission relied upon its staff's "unsupported determination that, pursuant to 10 CFR § 51.5(d), an environmental impact statement, appraisal, or negative declaration is not required." The Commission has considered Section III.A and has further considered the remaining requirements of Appendix R and remains convinced that the regulations are not substantive and are insignificant from the standpoint of environmental impact.

One commenter suggested that all plants be required to install dedicated shutdown capability. The Commission does not agree. We believe that the Commission's overall fire protection program involving extensive plant-specific fire protection modifications that are based on guidance set forth in Branch Technical Position BTP APCSB 9.5–1 and its Appendix A and the specific requirements of Appendix R to resolve disputed issues provide adequate fire protection.

One commenter stated that the ambiguity of the proposed regulation with regard to critical items requires that it be renoticed. The commenter referenced three portions of the proposed Appendix R as examples of such ambiguity. They were Section III.G, Section III.N, and Section III.Q. We have reviewed these examples.

In reference to the first example, the commenter stated that the first paragraph of Section III.G identifies alternative shutdown capability as an optional protective feature and that paragraph III.G.2.c then identifies alternative shutdown capability as a minimum fire protection feature. We do not agree with this statement. The first paragraph of Section III.G identifies alternative shutdown capability as one option in a combination of fire protection features for a specific fire area. Paragraph III.G.3 indicates when this option should be used.

In reference to the second example, the commenter stated that Section III.N requires a pressure differential across the test specimen during the testing of fire barrier penetration seals but fails to define the pressure differential. This comment is incorrect. The pressure differential called for by the proposed provision was the maximum pressure differential that the barrier would experience in the specific plant installation. In any event, the requirement for pressure differential during such testing has been deleted since only noncombustible material is now being used for such seals.

In reference to the third example, the commenter stated that Section III.Q is totally lacking in definition. We do not agree. Footnote 6 references Regulatory Guide 1.75 and IEEE Std 384–1974. The latter document is a commonly used industry standard that defines associated circuits and provides guidance for ensuring that such circuits do not compromise the independence of the shutdown circuits they are associated with.

Based on the above examples and our review of the other provisions of the proposed rule, we do not believe that the rule as proposed was ambiguous so as to require renoticing. Moreover, it should be noted that, based on other comments received on the proposed regulations, other commenters demonstrated a thorough understanding of the proposed requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and Sections 552 and 553 of Title 5 of the United States Code, notice is hereby given that the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50, are published as a document subject to codification.

[2] It should also be noted that § 2.204 is codified in Subpart B of 10 CFR Part 2. The scope of Subpart B is specifically limited to "cases initiated by the staff * * * to impose requirements by *order* on a licensee" (10 CFR 2.200(a)). (Emphasis supplied.)

45 FR 76968
Published 11/21/80
Effective 2/4/81

Criteria and Procedures for Determining Eligibility for Access to or Control Over Special Nuclear Material

See Part 11 Statements of Consideration

46 FR 20153
Published 5/4/81
Effective 5/4/81

10 CFR Part 50

Codes and Standards for Nuclear Power Plants

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to incorporate by reference new addenda of the ASME Boiler and Pressure Vessel Code. The sections of the ASME Code being incorporated provide rules for the construction of nuclear power plant components and specify requirements for inservice inspection of those components. Adoption of these amendments permits the use of improved methods for construction and inservice inspection of nuclear power plants.

EFFECTIVE DATES: May 4, 1981.

FOR FURTHER INFORMATION CONTACT: Mr. E. Baker, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Phone 301–443–5999.

SUPPLEMENTARY INFORMATION: On December 31, 1980, the Nuclear Regulatory Commission published in the **Federal Register** (45 FR 86500) proposed amendments to its regulation, 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The proposed amendments revised § 50.55a to incorporate by reference the

Winter 1978 Addenda and the Summer 1979 Addenda to Section III, Division 1, "Rules for the Construction of Nuclear Power Plant Components," of the ASME Boiler and Pressure Vessel Code and Section XI, "Inservice Inspection of Nuclear Power Plant Components," of the ASME Code.

Interested person were invited to submit written comments for consideration in connection with the proposed amendment by February 17, 1981. No comments were received. The Commission has adopted the proposed amendment with a minor editorial revision to accommodate the incorporation by reference of the ASME Code.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter 1, Code of Federal Regulations, Part 50 are published as a document subject to codification.

46 FR 28838
Published 5/29/81
Effective 5/29/81

10 CFR Part 50

Emergency Planning; Correction.

AGENCY: Nuclear Regulatory Commission.
ACTION: Final rule; correction.

SUMMARY: The Commission is making two minor corrections to its emergency planning rules that appeared in the Federal Register of Tuesday, August 19, 1980 [45 FR 55402]. The two corrections are designed to bring the language of the rule into conformity with the Commission's intent.

EFFECTIVE DATE: May 29, 1981.

FOR FURTHER INFORMATION CONTACT: Mark E. Chopko, Attorney, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC 20555, 202–634–3224.

SUPPLEMENTARY INFORMATION: In approving the text of the final rules on emergency planning on July 23, 1980, the Commission gave considerable attention to whether the overall standard to be used in judging emergency preparedness should be "whether the state of onsite and offsite emergency preparedness provides reasonable assurance that *appropriate* protective measures can and will be taken in the event of a radiological emergency" or some other standard. *See* SECY–80–275, Encl. B at 1, Vol. 14 of Administrative Record of Emergency Planning Rulemaking (PR–50 (44 FR 75167)) [emphasis added]. After extensive debate, the Commission settled upon "adequate" instead of "appropriate." The final rule, with two inadvertent exceptions, reflects that change. 45 FR 55402 (August 19, 1980). Transcript of July 23, 1980 Meeting, 20–48 (Vol. 9 of Record, *supra*). As the record makes clear, the Commission specifically intended in its public deliberations that the word "appropriate" was to be changed accordingly, especially in the rules. *Id.* at 47–48, 123–124. Indeed, the Supplementary Information uses the intended formulation "adequate protective measures" with respect to both new licenses and operating facilities in describing the final rules. 45 FR at 55403. However, one passage in 10 CFR 50.54(s)(2) [45 FR at 55410] and one passage in Appendix E, § III [45 FR at 55411] had been inadvertently overlooked in editing the final rule for publication last July. These minor corrections will conform the passages noted to the Commission's intent by replacing "appropriate" with "adequate" in the phrase "reasonable assurance that . . . protective measures can and will be taken" in 10 CFR 50.54 and making a similar change in Appendix E, § III.

Because the change is of a minor nature to conform the rules to the Commission's intent as stated in the public record of the rulemaking and does not signal any change in the standards applied under the rule or any other change in NRC practice, the Commission finds good cause to publish the rule without advance notice and public comment thereon as unnecessary. For the same reasons, these corrections shall be effective as a final rule upon publication in the Federal Register.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50, are published as documents subject to codification.

46 FR 44734
Published 9/8/81
Effective 9/8/81

10 CFR Part 50

Fire Protection Rule; Corrections

AGENCY: Nuclear Regulatory Commission.
ACTION: Final rule, corrections.

SUMMARY: In a final rule regarding fire protection published in the Federal Register on November 19, 1980, the Commission added a new § 50.48 and Appendix R to 10 CFR Part 50. Several errors appeared in that notice requiring correction. This notice corrects the errors and republishes the corrected text of affected sections.

EFFECTIVE DATE: September 8, 1981.

FOR FURTHER INFORMATION CONTACT: David P. Notley, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, phone 301–443–5946.

SUPPLEMENTARY INFORMATION: In a final rule published in the Federal Register on November 19, 1980 (45 FR 76602), the Commission added a new fire protection rule to its power reactor safety regulations. The rule was in two parts, a new § 50.48 in 10 CFR Part 50, and a new Appendix R to 10 CFR Part 50. The Federal Register notice announcing this rule contained several nonsubstantive errors requiring correction, including an apparent duplication of § 50.48 resulting from an earlier notice. This notice effects the required corrections.

46 FR 51718
Published 10/22/81
Effective 10/22/81 for Sections 2.744(e), 2.790(d)(1), 73.2(jj) and (ll), and 73.21(a), (b) and (c)(1). All remaining sections will be effective on 1/20/82.

Protection of Unclassified Safeguards Information

See Part 73 Statements of Consideration

46 FR 58484
Published 12/2/81
Effective 1/4/82

10 CFR Part 50

Interim Requirements Related to Hydrogen Control

AGENCY: Nuclear Regulatory Commission.
ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to require inerted containment atmospheres, and additionally, both hydrogen recombiner capability to reduce the likelihood of venting radioactive gases following an accident and the provision of high point vents in the primary coolant system. The inerting requirement applies only to boiling water nuclear power reactors with either Mark I or Mark II type containments; the requirement for

hydrogen recombiner capability applies to light-water nuclear power reactors that rely upon purge/repressurization systems as the primary means of hydrogen control; the requirement for the provision of high point vents applies to all light-water nuclear power reactors.

EFFECTIVE DATE: January 4, 1982.

FOR FURTHER INFORMATION CONTACT: Morton R. Fleishman, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone 301–443–5981.

SUPPLEMENTARY INFORMATION: On October 2, 1980, the Nuclear Regulatory Commission published in the Federal Register (45 FR 65466) a notice of proposed rulemaking on "Interim Requirements Related to Hydrogen Control and Certain Degraded Core Considerations" (Interim Rule) inviting written comments or suggestions on the proposed rule by November 3, 1980. The notice concerned proposed amendments to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to improve hydrogen management in light-water reactor facilities and to provide specific design and other requirements to mitigate the consequences of accidents resulting in a degraded reactor core.

Thirty-five persons submitted comments regarding the proposed amendments. Although the comment period was scheduled to expire on November 3, 1980, comments received subsequent to that date have been considered, with the latest comment letter being dated February 9, 1981. The comments are part of the public record and may be examined and copied in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C. A summary of the comments along with a comment analysis and a value/impact assessment are also available for inspection and copying in the Public Document Room.

These comments have been carefully reviewed and evaluated during preparation of this final rule. The final rule contains revisions to the proposed rule that reflect these comments. The commenters were about equally divided between those in favor of and those opposed to publishing the interim amendments. Whether or not the commenter favored publishing a final rule, additional detailed comments were generally provided on specific aspects of the proposed amendments.

The NRC's Office of Nuclear Reactor Regulation sent a letter on September 5, 1980 to all nuclear power plant licensees, applicants and construction permit holders providing a "Preliminary Clarification of the TMI Action Plan Requirements." This was followed by a series of four regional meetings, noticed by publication in the Federal Register on September 12, 1980 (45 FR 60508) and held during the week of September 22, 1980, in order to provide a more detailed explanation of the requirements and to obtain industry comments. Based on the discussions at the meetings and other comments received, the NRC revised the requirements and notified the applicants, licensees and construction permit holders to this effect by a letter dated October 31, 1980. The letter and revised requirements are included in NUREG–0736, "Clarification of TMI Action Plan Requirements."[1]

On May 13, 1981, the Commission published in the Federal Register (46 FR 26491) a notice of proposed rulemaking which proposed licensing requirements for pending operating license applications (OL Rule). The proposed OL Rule was based upon the requirements described in NUREG–0737 and includes, among others, many of the requirements originally included in the proposed Interim Rule published in October 1980.

Items originally proposed in the Interim Rule were:

1. Inerting of Mark I and II boiling water reactors (BWRs).
2. Design analyses for Mark III BWRs and pressurized water reactors (PWRs).
3. Dedicated hydrogen control penetrations.
4. Hydrogen recombiner capability.
5. High point vents
6. Post-accident protection of safety equipment and areas
7. In-plant iodine instrumentation
8. Post-accident sampling
9. Leakage integrity outside containment
10. Accident monitoring instrumentation
11. Detection of inadequate core cooling
12. Training to mitigate degraded core accidents

Of the above list, all except items 1, 2 and 4 were included in the proposed OL Rule and have been appropriately revised to reflect the comments received during the comment period on the proposed Interim Rule. Hence, those items included in the OL Rule have been deleted from this Interim Rule except for item 5 (High point vents). Item 5, while previously included in the OL Rule was felt to be primarily hydrogen related and thus more appropriately included in this Interim Rule. Those public comments received pertaining to the remaining OL Rule items will not be discussed here. All of the public comments may be examined and copied in the Commission's Public Document Room along with the response to the comments (SECY 81–245, "Interim Amendments to 10 CFR Part 50 Related to Hydrogen Control and Certain Degraded Core Considerations").

The final Interim Rule contains revisions to the proposed Interim Rule that reflect all of the applicable comments including those (a) given in response to the notice of proposed rulemaking, and (b) generated during the regional meetings and in response to the clarification letters of September 5, 1980, and October 31, 1980.

Before discussing the comments and the specific revisions resulting from the comments, it should be noted that, while § 50.44 has applied only to light-water nuclear power with zircaloy fuel cladding, the new amendments in the Interim Rule are not as limited and apply to light-water nuclear power reactors with either stainless steel or zircaloy fuel cladding. The Commission will be considering further modification of § 50.44 during the long-term rulemaking effort relative to consideration of degraded or melted cores in safety regulation. Part of this long-term rulemaking will involve a thorough reevaluation of hydrogen generation and control. In the interim, the Commission wishes to leave in place the existing provisions of § 50.44 because of the requirements for dealing with design basis accidents. These include, for example, requiring:

1. The capability for measuring hydrogen concentrations in containment.
2. The capability for ensuring a mixed atmosphere in containment.
3. The capability for controlling combustible gas concentrations in containment following a postulated LOCA.
4. The capability to deal with hydrogen from radiolytic decomposition of the reactor coolant and the corrosion of metals. (These have release characteristics that differ from those associated with metal-water reaction.)
5. That the combustible gas control systems conform with the general requirements of Criteria 41, 42 and 43 of Appendix A of 10 CFR Part 50.

Several commenters have expressed concern that the various ruelmakings currently being pursued by NRC should be integrated, i.e., safety goal, degraded core considerations, minimum engineered safety features, siting and emergency planning. The NRC shares this concern. On October 15, 1980, the Executive Director for Operations established a Degraded Cooling Steering Group to coordinate degraded cooling

[1]Copies of this report may be obtained from GPO Sales Program, Division of Technical Information and Document Control, U.S.C. Nuclear Regulatory Commission, Washington, D.C. 20555.

and related rules. This group has completed its work and prepared a plan to ensure future integration of these activities.

Numerous commenters have questioned many of the implementation dates specified in the rule, indicating that they cannot be met for a variety of reasons, such as procurement lead time, need for the design studies, availability of acceptable equipment, etc. The staff agrees with these comments and has made appropriate changes to the implementation dates.

Inerting of Mark I and II BWRs [§ 50.44(c)(3)(i)]

Some commenters, particularly those associated with Mark I boiling water reactors (BWRs), questioned the advisability of requiring inerting of containments and suggested that other hydrogen control options be permitted. This issue has been extensively reviewed and discussed among the Commission, NRC staff and industry participants. Numerous reports and letters have been written and many meetings held in order to thoroughly air the issue. Considering the information previously developed, the Commission continues to believe that it would be prudent, pending completion of the long term rulemaking on degraded core cooling, to require that all Mark I and II BWR containments be provided with an inerted atmosphere during normal operations. However, one utility (Vermont Yankee) has recently expressed a renewed interest in providing a hydrogen control system, other than preinerting, for its facility. Two possible options, post-accident inerting and a deliberate ignition system, could be considered for the Mark I containment of this facility. The Commission has not received any specific proposal or analyses for either of these hydrogen control systems. Thus, it is concluded that, absent any proposed and justified alternative, preinerting is required for Mark I BWRs. If Vermont Yankee (or others) propose an alternative system backed up by suitable tests and analyses, the Commission will review it. If found acceptable, the alternative systems would be permitted, either by subsequent amendment or exemption to this section.

The proposed rule's deadline for installation of inerting systems has been extended to account for delay in publication of a final rule. The rule has also been changed to clarify that the paragraph applies only to Mark I and II BWRs.

Hydrogen Recombiner Capability [§ 50.44(c)(3)(ii)]

Several commenters have recommended that the proposed § 50.44(c)(3)(ii) be modified to allow the use of alternate means of hydrogen control, such as internal recombiners, rather than to restrict the rule to external recombiners. The proposed rule was not intended to preclude this alternative. In fact, if internal recombiners were present before or will be installed in the future, this section of the rule would not apply since purge/repressurization systems would not be the primary means for combustible gas control. This section of the rule only applies to facilities that rely upon purge/repressurization systems as the primary means of controlling combustible gases following a LOCA. Based on existing § 50.44, all facilities must have either internal or external recombiners or purge/repressurization systems for controlling combustible gases following a LOCA. For those BWRs which are inerted and which rely upon purge/repressurization for combustible gas control, the intent of the rule is to require that they be provided with either internal recombiners or the capability to install external recombiners.

It should also be noted that this section of the rule does not require actual installation of external recombiners; rather, it requires only the capability for installation. To avoid confusion, the rule has been clarified to indicate that internal recombiners are an acceptable alternative to the installation of external recombiner capability.

High Point Vents in Reactor Coolant System [§ 50.44(c)(3)iii)]

A number of commenters have remarked that there is no justification for applying the single failure criterion to the design of the high point vents. Furthermore, it has been suggested that the negative aspects of the high point vents have not been adequately considered and that, in fact, the vents may increase the risk to the public.

In response to these comments, the single failure criterion requirement has been deleted; however, one aspect of the criterion has been retained, namely, that a single failure within the power and control parts of the reactor coolant vent system should not prevent isolation of the entire vent system when required. Also a sentence has been added to require that the use of the high point vents not "aggravate the challenge to the containment or the course of the accident." Finally, the Interim Rule has been revised to relax the implementation date, in response to comments received at regional meetings with industry in September 1980.

Regulatory Flexibility Act

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121. Since these companies are dominant in their service areas, this rule does not fall within the purview of the Act.

Accordingly, notice is hereby given that, pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of Title 5 of the United States Code, the following amendments to 10 CFR Part 50 are published as a document subject to codification.

46 FR 63031
Published 12/30/81
Effective 12/30/81

10 CFR Part 50

Emergency Planning and Preparedness for Production and Utilization Facilities

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is making two changes to its emergency planning regulations. The change to 10 CFR Part 50, Appendix E delays the date by which prompt public notification systems must be operational around all nuclear power plants. The change to § 50.54 clarifies the language of the rule to conform with the Commission's intent at the time of promulgation.

EFFECTIVE DATE: December 30, 1981.

FOR FURTHER INFORMATION CONTACT: Michael T. Jamgochian, Human Factors Branch, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (telephone 301–443–5942).

SUPPLEMENTARY INFORMATION:

I. The Amendment to 10 CFR Part 50, Appendix E

On August 19, 1980, the NRC published a revised emergency planning regulation which became effective on November 3, 1980. The rule required licensees to demonstrate, among other things, by July 1, 1981:

"that administrative and physical means

have been established for alerting and providing prompt instructions to the public within the plume exposure pathway EPZ. The design objective shall be to have the capability to essentially complete the initial notification of the public within the plume exposure pathway EPZ within about 15 minutes."

On August 11, 1981, the Commission discussed possible actions because licensees failed to comply with the July 1, 1981 requirement contained in 10 CFR 50.47(b)(5) and 10 CFR 50, Appendix E, Section IV.D.3. The licensees' failure to meet the July 1, 1981 date was attributed to unforeseen difficulties and uncertainties surrounding the design, procurement and installation of the prompt notification systems.

At the August 11, 1981 meeting, the Commission approved publication of a proposed rule change which would provide an extension of the July 1, 1981 date to February 1, 1982. (See 46 FR 46587). That Federal Register notice requested public comment during a 30-day period ending October 21, 1981.

To date, comments have been received from four NRC licensees, five individuals or organizations in the nuclear industry, one from the general public, three from environmental organizations, one from a mass transit system director, and one from a State governor. The comments received from the general public and from the environmental organizations were against delaying the implementation date to February 1982. The letters from the other commenters generally agree with extending the implementation date along with additional suggestions.

One suggested modification to the proposed rule change, which has been accepted and included in these final amendments, is not to eliminate the four-month period for correction of any deficiencies identified during the initial testing of the prompt notification system. The Commission now believes that the elimination of this four-month period would be inconsistent with the need to perform a reasonable test of the system and make any needed changes as indicated by the test results. The enclosed effective regulation incorporates this concept. The installation date, however, remains February 1, 1982, and any licensee not completing the installation by that date would be subject to enforcement action.

After evaluating all public comment letters received, the Commission has decided to publish, as immediately effective, a final rule change to 10 CFR Part 50, Appendix E which will delay the implementation date for the prompt public notification systems from July 1, 1981 to February 1, 1982.

This decision is based on a recognition that emergency plans and preparedness have significantly improved within the last year at and around every nuclear power plant site. This significant improvement has been confirmed by NRC teams who have visited a number of plant sites to evaluate the licensees' compliance with the upgraded emergency planning regulations of August 1980. In addition, the Federal Emergency Management Agency (FEMA) and the NRC have monitored numerous nuclear emergency exercises involving State and local governments and the licensees, and again have witnessed a significant improvement on onsite and offsite emergency preparedness.

The decision to delay the implementation data is also based on the recognition that there exist customary warning systems (police, radio, telephone) which are viewed as sufficiently effective in many postulated accident scenarios. In view of the above, the Commission finds that there exists sufficient reason to believe that appropriate protective measures can and will be taken for the protection of the health and safety of the public in the event of a radiological emergency during the extended time period for compliance.

II. The Amendment to 10 CFR 50.54

Additionally, 10 CFR 50.54(s)(2), currently requires that,

"For operating power reactors, the licensee, State, and local emergency response plans shall be implemented by April 1, 1981, except as provided in Section IV.D.3 of Appendix E of this part. If after April 1, 1981, the NRC finds that the state of emergency preparedness does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency and if the deficiencies are not corrected within four months of that finding, the Commission will determine whether the reactor shall be shut down until such deficiencies are remedied or whether other enforcement action is appropriate."

It has come to the Commission's attention that because this section of the regulation was written as one paragraph, it can be interpreted to mean that the four-month period for the correction of emergency preparedness deficiencies does not apply to "Section IV.D.3 of Appendix E."

This is a misinterpretation of the Commission's intent, which was that the four-month period is to apply to any deficiencies identified in the emergency plans. The Commission is therefore modifying § 50.54(s)(2) to more clearly reflect that intent. The four-month period provided in § 50.54(s)(2), will not apply to any licensee for the installation and initial test of the public notification system by February 1, 1982. If a licensee is not in compliance with this requirement for installation and testing by February 1, 1982, the Commission will consider taking appropriate enforcement actions promptly at that time. In determining appropriate enforcement action to initiate, the Commission will take into account, among other factors, the demonstrated diligence of the licensee in attempting to fulfill the prompt public notification capability requirement. The Commission will consider whether the licensee has kept the NRC informed of the steps that it has taken, when those steps were taken and any significant problems encountered, and the updated timetable which the licensee expects will be met in achieving full compliance with the prompt public notification capability requirements. The four-month period will, however, apply to correction of deficiencies identified during the initial test of the prompt public notification systems as well as those deficiencies discovered thereafter.

Because the amendment to § 50.54(s)(2) is interpretative and of a minor nature, simply resolving an ambiguity in the rules to the Commission's intended meaning at the time of promulgation, the Commission finds good cause to dispense with advance notice and opportunity for public comment thereon as unnecessary. For this reason, this change shall be effective as a final rule on December 30, 1981.

Likewise, the Commission is publishing the final amendments to 10 CFR Part 50, Appendix E (extending the implementation date for the installation of a prompt public notification system) as effective immediately upon publication, pursuant to 5 U.S.C. 553(d)(1), since the rule is expected to relieve the obligation of certain licensees with respect to the present July 1, 1981 deadline for operational public notification systems. In that regard, the Commission notes that the final rule, when effective, will be applied to ongoing licensing proceedings now pending and to issues or contentions therein. *Union of Concerned Scientists* v. *AEC*, 499 F. 2d 1069 (D.C. Cir. 1974).

Regulatory Flexibility Act Statement

Pursuant to the Regulatory Flexibility Act of 1980, Pub. L. 96–354, the NRC has determined: (1) That the delaying of the implementation date for the prompt public notification systems will not have a significant economic impact on a substantial number of small entities, pursuant to the Regulatory Flexibility Act of 1980, section 605(b) and (2) that the rule change to § 50.54(s)(2) is not subject to the provisions of the Regulatory Flexibility Act of 1980, because the Commission has determined pursuant to 5 U.S.C. 553 that a notice of proposed rulemaking for § 50.54 (s)(2) need not be issued and that the rule may be promulgated in final form and become effective on December 30, 1981.

Paperwork Reduction Act Statement

Pursuant to the provisions of the Paperwork Reduction Act of 1980 (Pub. L. 96–511), the NRC has made a determination that this final rule does not impose new recordkeeping, information collection, or reporting requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of title 5 of the United States Code, the following amendments to 10 CFR Part 50 are published as documents subject to codification:

46 FR 63033
Published 12/30/81
Effective 12/30/81

10 CFR Part 50

Reporting, Recordkeeping, and Application Requirements; Approval

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations on the domestic licensing of production and utilization facilities to indicate Office of Management and Budget approval of the information collection requirements contained in the regulations. This action is required by the Paperwork Reduction Act of 1980.

EFFECTIVE DATE: December 30, 1981.

FOR FURTHER INFORMATION CONTACT: Steve Scott, Chief, Document Management Branch, Division of Technical Information and Document Control, Office of Administration, Telephone: (301) 492–8585.

SUPPLEMENTARY INFORMATION: The Paperwork Reduction Act of 1980 (Pub. L. 96–511; 44 U.S.C. Chapter 35) transferred the responsibility for approving the information collection requirements imposed by the Nuclear Regulatory Commission (NRC) on the public from the General Accounting Office (GAO) to the Office of Management and Budget (OMB). The Act requires that each existing information collection requirement be reapproved by OMB as existing GAO clearances expire. This requirement applies to the application, recordkeeping, and reporting requirements contained in NRC regulations.

On October 30, 1981, the NRC obtained OMB reapproval for the information collection requirements contained in 10 CFR Part 50. This amendment adds a new § 50.8 to Part 50 setting out the OMB approval number, the expiration date of the current approval, and a list of sections within Part 50 that contain an approved information collection requirement. This amendment also removes the note concerning the expired GAO clearance that follows § 50.110.

Because this is a nonsubstantive amendment dealing with a minor procedural matter, good cause exists for finding that the notice and comment procedures of the Administrative Procedure Act (5 U.S.C. 553) are unnecessary and for making the amendment effective December 30, 1981.

Under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 552 and 553, the following amendments to 10 CFR Part 50 are published as a document subject to codification.

46 FR 63208
Published 12/31/81
Effective 2/1/82

10 CFR Part 50

Codes and Standards for Nuclear Power Plants; ASME Boiler and Pressure Vessel Code; Incorporation by Reference

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is amending its regulations to incorporate by reference new addenda of the ASME Boiler and Pressure Vessel Code. The sections of the ASME Code being incorporated provide rules for the construction of nuclear power plant components and specify requirements for inservice inspection of those components. Adoption of these amendments will permit the use of improved methods for construction and inservice inspection of nuclear power plants.

EFFECTIVE DATE: February 1, 1982.

FOR FURTHER INFORMATION CONTACT: Mr. E. Baker, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 443–5892.

SUPPLEMENTARY INFORMATION: On July 27, 1981 the Nuclear Regulatory Commission published in the **Federal Register** (46 FR 38374) proposed amendments to its regulation, 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The proposed amendments revised § 50.55a to incorporate by reference the Winter 1979 Addenda, 1980 Edition, Summer 1980 Addenda, and the Winter 1980 Addenda of section III and the Winter 1979 Addenda, the 1980 Edition, and the Winter 1980 Addenda to section XI of the ASME Boiler and Pressure Vessel Code.

The incorporation of the new edition and addenda does not change any of the previous supplementary requirements included in the regulation. Until the ASME Code adds current requirements for inspecting the residual heat removal and emergency core cooling systems, the regulation will continue to require that these systems be inspected to the provisions cited in § 50.55a(b)(2)(iv).

One comment was received on the proposed rule. It recommended that § 50.55a(b)(2)(i) be revised to reflect the updated incorporation by reference of the ASME Boiler and Pressure Vessel Code, as stated in § 50.55a(b)(2). The reason given for recommending the revision was that § 50.55a(b)(2)(i) was being interpreted as prohibiting the use of addenda that were published and incorporated subsequent to the Summer 1978 Addenda to the 1977 Edition of the code.

As a result of the comment the title and the body of § 50.55a(b)(2)(i) were editorally revised to clarify them.

Some of the changes effected in the addenda which are incorporated through the adoption of the amendments are:

1. Section XI requires that a system hydrostatic test be performed after all inservice repairs and replacements to Class 1 systems and components.

2. Section III requires that there be some method of remotely monitoring the position of pressure relief devices.

3. Both sections III and XI allow the practical exam, required for Nondestructive Examination (NDE)

qualification, to be given by the American Society for Nondestructive Testing (ASNT) rather than the employer.

4. Section III requires that licensees meet the requirements of the national standard, ANSI/ASME N626.3–1979 "Qualification and Duties of Personnel Engaged in ASME Boiler and Pressure Vessel Code, Section III, Divisions 1 and 2, Certifying Activities."

Interested person were invited to submit written comments for consideration in connection with the proposed amendment by September 10, 1981. One editorial comment was received and the paragraphs addressing the effective edition and addenda of the ASME Code were added to the preamble in response to the comment. The Commission has adopted the proposed amendment with a minor editorial revision to accommodate the incorporation by reference of the ASME Code.

Paperwork Reduction Act Statement

The recordkeeping requirements contained in this Regulation have been approved by the Office of Management and Budget; OMB approval No. 3150–0011.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121. Since these companies are dominant in their service areas, this rule does not fall within the purview of the Act.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter 1, Code of Federal Regulations, Part 50 are published as a document subject to codification.

47 FR 2286
Published 1/15/82
Effective 1/15/82

Licensing Requirements for Pending Construction Permit and Manufacturing License Applications

See Part 2 Statements of Consideration

47 FR 4497
Published 2/1/82

10 CFR Part 50

Licensing Requirements for Pending Construction Permit and Manufacturing License Applications

Corrections

In FR Doc. 82–1174 appearing on page 2286, in the issue of Friday, January 15, 1982, make the following changes:

1. On page 2301, third column, § 50.34(f), fifth and sixth lines, delete "(insert effective date of amendment)" and insert "(February 16, 1982)"; and in the seventh line, "* * * (b)(1)" should read "* * * (f)(1)".

2. On page 2302, first column, § 50.34(f), fifth line, "* * * (b) * * *" should read "* * * (f) * * *"; third column, § 50.34(f)(1)(xii), fourth line, "* * * (b) * * *" should read "* * * (f) * * *"; and the third line of § 50.34(f)(1)(xii)(B), "* * * (b) * * *" should read "* * * (f) * * *"

3. On page 2303, second column, § 50.34(f)(2)(x), eleventh line, insert the following after "testing"; "under ATWS conditions need".

4. On page 2304, third column, § 50.34(f)(3)(v), eighteenth line from the top, insert "(B)" in front of "(1)".

47 FR 11651
Published 3/18/82
Effective 5/17/82

Correction 47 FR 15569

10 CFR Part 50

Rule To Require Applicants To Evaluate Differences From the Standard Review Plan

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is issuing a rule that will require future applicants for operating licenses, construction permits, manufacturing licenses, and preliminary or final design approvals for standard plants to identify and evaluate differences from the acceptance criteria of the applicable revision of the Standard Review Plan (SRP) as part of the technical information to be submitted as part of an application. The SRP was originally issued in 1975 as NUREG–75/087; it describes an acceptable basis and criteria for conclusions presented in a staff Safety Evaluation Report (SER) for an application. The most recent revision to the SRP was issued in September 1981. The purpose of this rule is to improve the efficiency and effectiveness of NRC safety reviews.

EFFECTIVE DATE: May 17, 1982.

ADDRESS: Copies of the rule and related background material are available for inspection at the Commission's Public Document Room at 1717 H Street, N.W., Washington D.C. Single copies may be obtained on request from the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Document Control.

FOR FURTHER INFORMATION CONTACT: Robert L. Tedesco, Assistant Director for Licensing, Division of Licensing, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (301) 492–7425.

SUPPLEMENTARY INFORMATION: On October 9, 1980, the NRC published in the Federal Register (45 FR 67099) a Notice of Proposed Rulemaking that would require all commercial nuclear power plant licensees and applicants to document and evaluate differences from the Standard Review Plan (SRP). Interested persons were invited to submit written comments to the Secretary of the Commission by November 24, 1980. Numerous comments were received. After consideration of the comments and other factors involved, the Commission has amended the requirements as published for public comment by limiting their applicability to nuclear power plant applications docketed after the effective date of the rule.

The majority of the comments on the proposed rule (1) questioned the time permitted to comply with the requirements of the rule in consideration of the significant short-term impact on engineering resources, (2) questioned the applicability of the requirements to operating reactors, and (3) questioned why pending applications for construction permits should be subject to significantly different documentation requirements that similarly situated pending applications for operating licenses.

To allow further consideration of these comments, the Commission has decided to exclude operating reactors and pending applications for operating licenses from the requirements of the rule, at this time. The pending operating license applicants have proceeded far enough in the licensing process that the application of the rule at this time could delay licensing decisions. Further, excluding the operating reactors and pending operating license applicants will significantly reduce the impact on available short-term engineering resources. In addition, the Commission

had decided to exclude pending applications for construction permits and manufacturing licenses docketed prior to the effective date of the rule, since the evaluation required of these applications could add significantly to the length of their licensing process while the evaluation could be performed later at the operating license review stage without this disadvantage. The Commission is also clarifying that the requirements of the rule are explicitly applicable to new applications for preliminary and final design approvals of standard plants and that applicants for these approvals must evaluate their application against the SRP. In the proposed rule, such requirements for standard plant applications were implicit in that it was proposed to include all CP and OL applications (including those referencing standard plant approvals) within the scope of the rule. The Commission has decided that the requirements for standard plants should be explicit to avoid any misunderstanding on this point.

In adopting this rule, the Commission wishes to make it clear that it does not intend to elevate the status of the SRP to that of a regulation. The SRP is not a regulation and compliance with it is not required. The SRP acceptance criteria are intended by the staff to provide one way, but not necessarily the only way, of complying with the Commission's regulations. The purpose of this rule is to require applicants to identify differences from the SRP acceptance criteria and to evaluate how the proposed alternatives to the SRP criteria provide an acceptable method of complying with the Commission's regulations. This will lead to improved efficiency and effectiveness of NRC safety reviews.

The Commission will publish for public comment any guidance documents the staff intends to use to implement the rule.

Paperwork Reduction Act Review

The rule will be submitted to the Office of Management and Budget for clearance of the application requirements as required by the Paperwork Reduction Act (P.O. 96-511). The SFF-83, "Request for Clearance," Supporting Statement, and related documentation submitted to OMB will be available for public inspection and copying in the NRC Public Document Room at 1717 H Street NW., Washington, D.C. 20555.

Pursuant to the Atomic Energy Action of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the Section 552 and 553, Title 5 of the United States Code, the following rule is published for codification.

47 FR 13750
Published 3/31/82
Effective Date - See Part 2

Elimination of Review of Financial Qualifications of Electric Utilities in Licensing Heatings For Nuclear Power Plants

See Part 2 Statements of Consideration

47 FR 15569
Published 4/12/82

10 CFR Part 50

Rule to Require Applicants to Evaluate Differences From the Standard Review Plan; Correction

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule; correction.

SUMMARY: On March 18, 1982, the Commission published in the **Federal Register** (47 FR 11651) a final rule to require certain applicants and licensees under 10 CFR Part 50 to evaluate differences from the Standard Review Plan (SRP). That document contained errors which are corrected by this document.

FOR FURTHER INFORMATION CONTACT: John D. Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: (301) 492-7086

SUPPLEMENTARY INFORMATION: In FR Doc. 82-7425, appearing at 47 FR 11651, March 18, 1982, make the following corrections on page 11652:

1. Amendatory instruction number 1 and the authority citation for 10 CFR Part 50 are corrected to read as follows:

1. The authority citation for Part 50 is revised to read as follows:

Authority: Secs. 103, 104, 161, 182, 183, 189, 68 Stat. 936, 937, 948, 953, 954, 955, 956, as amended (42 U.S.C. 2133, 2134, 2201, 2232, 2233, 2239); secs. 201, 202, 206, 88 Stat. 1243, 1244, 1246 (42 U.S.C. 5841, 5842, 5846), unless otherwise noted.

Sec. 50.78 also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Secs. 50.80-50.81 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Secs. 50.100-50.102 issued under sec. 186, 68 Stat. 955 (42 U.S.C. 2236).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 50.10 (a), (b), and (c), 50.44, 50.46, 50.48, 50.54, and 50.80(a) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 50.10 (b) and (c) and 50.54 are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 50.55(e), 50.59(b), 50.70, 50.71, 50.72, and 50.78 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. In amendatory instruction number 2 and in new paragraph § 50.34(f), the paragraph letter designation is corrected to read § 50.34(g).

47 FR 19512
Published 5/6/82
Effective 5/6/82

10 CFR Part 50

Emergency Planning and Preparedness for Research and Test Reactors: Extension of Submittal Dates

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations in order to: (1) Increase the thermal power level threshold for the submittal of emergency plans from 500 kilowatts thermal to 2 megawatts thermal, (2) Extend the submission date for emergency plans for those facilities having power levels of 2 megawatts and above to four months after the effective date of the rule and (3) Require all research and test reactors below 2 megawatts thermal to submit emergency plans by November 3, 1982.[1] The increase in thermal power level threshold for the submittal of emergency plans more accurately reflects the power level at which the potential for any significant offsite consequences exist. The effect of the final amendment would be that affected licensees are provided sufficient time to prepare upgraded emergency plans.

EFFECTIVE DATE: May 6, 1982.

FOR FURTHER INFORMATION CONTACT: Kenneth E. Perkins, Acting Chief, Incident Response and Development Branch, Division of Emergency Preparedness, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (Telephone: 301-492-7361).

SUPPLEMENTARY INFORMATION:

[1] The power levels described here refer to steady-state power levels.

I. Amendments to 10 CFR Part 50 and Appendix E to Part 50

On August 19, 1980, the Nuclear Regulatory Commission published in the Federal Register (45 FR 55402), amendments to its regulations concerning the upgrading of emergency planning and preparedness. The effective date for these regulations was November 3, 1980.

Among other things, the revised regulations required each licensee authorized to possess and/or operate a research or test reactor facility with power levels greater than or equal to 500 KW thermal, under licenses of the type specified in 10 CFR 50.21(c), to submit emergency plans to the Director of Nuclear Reactor Regulation for approval within one year from the effective date of the rule, *i.e.* by November 3, 1981. A similar requirement for such reactors with power levels less than 500 KW thermal requires emergency plan submittals by November 3, 1982.

II. The Amendment to 10 CFR 50.54(r)

The NRC staff evaluated the capabilities of the 24 licensees operating at 500 KW thermal or above to submit revised emergency plans by November 3, 1981 which would meet all of the requirements in the emergency planning and preparedness regulations. *See* 10 CFR 50.54(r), (q) and Appendix E to Part 50.

These 24 licensees were not able to submit emergency plans fully complying with 10 CFR Part 50 requirements by November 3, 1981. This inability to meet the November 3, 1981 date for submitting emergency plans is attributed to the delay in development of revised guidance criteria for the preparation of emergency plans for research and test reactors that are consistent with the amended regulations.

On December 31, 1981, a proposed rule was published in the Federal Register (46 FR 63315), for those research and test reactor licensees required to submit emergency plans by November 3, 1981. The proposed rule would have (1) increased the thermal power level threshold for the submittal of emergency plans from 500 kilowatts thermal to 2 megawatts thermal, (2) extended the submission date for emergency plans for those facilities having power levels of 2 megawatts and above, to four months after the effective date of this rule and (3) required all research and test reactors below 2 megawatts thermal to submit emergency plans by November 3, 1982.

On January 11 1982, a copy of the Federal Register notice was sent to all nonpower reactor licensees to alert them of the proposed rulemaking and provide adequate time for comments. On January 25, 1982, and information letter was transmitted to all research and test reactor licensees by the Office of Nuclear Reactor Regulation. This letter further alerted licensees of the proposed rulemaking and provided additional information on the current status of guidance criteria for use in the development of acceptable radiological emergency response plans for their facilities.

The Federal Register notice of proposed rulemaking invited public comment during a 30-day period ending February 1, 1982. Four comments were received from NRC licensees on the proposed amendment. Two fully supported the proposed rule, and the other two, although generally favorable, were primarily concerned about the schedule for upgraded guidance criteria and suggested that the submittal date for emergency plans be one year from the publication date of upgraded guidance criteria.

The January 25, 1982 letter provided the status of the guidance criteria. Two guidance documents were referenced in this letter. DRAFT II, dated November 29, 1982, of the revision to American National Standard ANSI/ANS–15.16–1978, "Emergency Planning for Research Reactors", was published in January 1982 for interim use and comment. Revision 1 to Regulatory Guide 2.6, "Emergency Planning for Research and Test Reactors", which endorses ANSI/ANS–15.16 was published in March 1982 for comment.

Because of the time required for regulatory guide approval procedures, this document probably will not become final before June or July. Therefore, the staff will issue a generic letter to all research and test reactor licensees requesting that they use Revision 1 to Regulatory Guide 2.6 (for comment) and ANSI/ANS–15.16 to meet the requirement of this final rule by September 7, 1982. With regard to the two commenters' (who are in the less than 2 megawatt category) request to extend the date to one year from the publication date of the guidance, the staff considers that the extension by a full year from the original date they were to submit emergency plans is sufficient time for preparation.

While compliance by affected licensees with the November 3, 1981 date for submittal of emergency plans has been delayed, the Commission considers that the state of emergency preparedness has significantly improved within the last year at research and test reactor facilities. This improvement has been confirmed by licensee participation and exchange of information in the development of guidance criteria for preparation and evaluation of radiological emergency response plans for research and test reactors. In addition, all research and test reactor licensees (65 total) presently have emergency plans prepared pursuant to 10 CFR Part 50 prior to the Commission's adoption of the upgraded emergency planning regulations in 1980.

Credible accidents for research and test reactors have been evaluated by the Commission and are discussed in the proposed amendment which was published in the Federal Register (46 FR 63315), on December 31, 1981. The Commission concluded that the power level threshold of 2 megawatts thermal more accurately reflects the power level at which the potential for any significant offsite consequences exist. Based on this and the above information, the Commission finds that there exists sufficient reason to believe that appropriate protective measures can and will be taken to assure protection of the health and safety of the public in the event of a radiological emergency. This amendment is effective on publication because it "relieves a restriction" under Section 551(d)(1) Administrative Procedure Act.

Paperwork Reduction Act Statement

Pursuant to the provisions of the Paperwork Reduction Act of 1980 (Pub. L. 96–511), the NRC has made a determination that this final rule does not impose new nor impact existing information collection requirements.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the NRC certifies that this rule will not have a significant economic impact on a substantial number of small entities. The final rule concerns and extension of the date for research and test reactor licensees to submit emergency plans complying with 10 CFR Part 50, Appendix E, to the Nuclear Regulatory Commission for approval. Accordingly, there is no significant economic impact on a substantial number of small entities, under the Regulatory Flexibility Act of 1980.

List of Subjects in 10 CFR Part 50

Antitrust, Classified Information, Fire Prevention, Intergovernmental Relations, Nuclear Power Plants and Reactors, Penalty, Radiation Protection, Reactor Siting Criteria, Reporting Requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to 10 CFR Part 50 is published as a document subject to codification.

47 FR 28363
Published 6/30/82
Effective 6/30/82

10 CFR Part 50

Environmental Qualification of Electric Equipment

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: In a Memorandum and Order issued on May 23, 1980, the Nuclear Regulatory Commission (NRC) directed that all operating plants complete the environmental qualification of safety related electric equipment no later than June 30, 1982. Also, as specified in the Memorandum and Order, the NRC proposed rules to codify the Commission standards in this area. The proposed rules contained a new implementation schedule which would supersede the June 30 deadline in the technical specifications when the proposed rules are adopted as final. The Commission had expected to publish final rules by June 30, however this has not proved possible. Therefore, the Commission finds it necessary to suspend the June 30 deadline now contained in the technical specifications or license conditions pending publication of final rules.

EFFECTIVE DATE: June 30, 1982.

FOR FURTHER INFORMATION CONTACT: Satish K. Aggarwal, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, phone 301–443–5946.

SUPPLEMENTARY INFORMATION: On May 23, 1980, the Commission issued a Memorandum and Order in the Matter of the Petition for Emergency and Remedial Action, CLI–80–21, 11 NRC 707. In that Order, the Commission directed that all operating plants complete the qualification of safety-related electric equipment pursuant to the Division of Operating Reactors (DOR) Guidelines and NUREG–0588 no later than June 30, 1982, and stated that this requirement would be incorporated into the technical specifications for each operating plant. This was accomplished by a series of plant-specific orders issued by the Director of Nuclear Reactor Regulation. For plants receiving operating licenses after these orders had been issued, the deadline was placed in a license condition.

In the May 23 Memorandum and Order, the Commission also requested that the staff engage in rulemaking to codify the Commission's standards in this area. A notice of proposed rulemaking was published in the Federal Register on January 20, 1982 (47 FR 2876). The proposed rule contained a new implementation schedule which would supersede the June 30 deadline in the technical specifications or license conditions of operating plants. In addition, the proposed rule included a requirement that licensees of operating plants submit justification for continued operation while qualification efforts are still underway, but it was noted that, if these plant-specific justifications were voluntarily submitted and evaluated by the staff prior to publication of a final rule, this requirement would be deleted. The Commission expected to be able to publish the final rule prior to the June 30 deadline. This has not proved possible. Although Commission action on the final rule is nearly complete, publication will be delayed somewhat beyond June 30. It is therefore necessary to suspend the deadline now contained in technical specifications or license conditions pending publication of the final rule.

The Commission is today promulgating an interim 10 CFR 50.49 which will be superseded by the final rule bearing the same section number. The interim rule suspends the deadline now contained in technical specifications or license conditions pending publication of the final rule, the implementation schedule of which will be immediately effective. Although licensees will be operating under no deadline for a short period of time, the Commission expects that licensee efforts to meet the requirements of CLI–80–21 will continue without interruption.

The Commission has received, and the staff has evaluated, each operating plant licensee's justification for continued operation. On the bases of these analyses, the Commission has determined that continued operation of these plants pending completion of the equipment qualification program, will not present undue risk to the public health and safety. The state of environmental qualification at operating plants is much improved since imposition of the June 30 deadline, though much work remains, and the Commission finds that no public purpose would be served by placing licensees in jeopardy of enforcement actions for the brief interim period between June 30 and publication of the final rule which will establish a new schedule.

This rule may be made immediately effective upon publication in the Federal Register, pursuant to section 553(d)(1) of the Administrative Procedure Act, because it "relieves a restriction" previously imposed upon licensees of operating nuclear power plants. Furthermore, the Commission is dispensing with public notice and comment in promulgating this rule in final form. The Commission had intended to promulgate a final rule by June 30, 1982. However, because the Commission will be unable to promulgate a final rule by that date, and because licensees should not be placed in jeopardy of enforcement action pending promulgation of a revised schedule for implementation of equipment qualification requirements, the Commission finds good cause to dispense with notice and comment. In addition, the Commission has already solicited comments on the proposed rule's schedule delaying implementation beyond June 30 and the final rule will contain a schedule of this type.

Regulatory Flexibility Act Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not have a significant economic impact upon a substantial number of small entities. The rule affects only operating nuclear power plant licensees, which do not fall within the definition of a small business as defined in the Small Business Act, 15 U.S.C. 632, or as defined in the Small Business Size Standards, 13 CFR Part 21.

Paperwork Reduction Act Statement

Pursuant to the Paperwork Reduction Act of 1980, Pub. L. 96–511, the Commission has determined that this rule does not impose new recordkeeping, information collection, or reporting requirements.

List of Subjects in 10 CFR Part 50

Nuclear power plants and reactors.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, notice is hereby given that the following amendment to Title 10, Chapter I, Code of Federal Regulations, Part 50, is published as a document subject to codification.

47 FR 30232
Published 7/13/82
Effective 7/13/82

10 CFR Part 50

Emergency Planning and Preparedness

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to clarify: (1) That emergency preparedness exercises are part of the preoperational inspection and thus required prior to operation above 5% of rated power, but not for a Licensing Board, Appeal Board, or Commission licensing decision; and (2) that for issuance of operating licenses authorizing only fuel loading and low power operation (up to 5% of rated power), no NRC or Federal Emergency Management Agency (FEMA) review, findings and determinations concerning the state or adequacy of offsite emergency preparedness shall be necessary.

EFFECTIVE DATE: July 13, 1982.

FOR FURTHER INFORMATION CONTACT: Michael T. Jamgochian, Human Factors Branch, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 443–5942.

SUPPLEMENTARY INFORMATION: On December 15, 1981, the Commission published in the **Federal Register** two proposed rule changes (46 FR 61132 and 46 FR 61134). The proposed rule change in 46 FR 61134 was considered by the Commission as clarifying in nature. It proposed that 10 CFR 50.47(a)(1) be modified to clarify that the findings on emergency planning required prior to license issuance are predictive in nature and need not reflect the actual state of preparedness at the time the finding is made. The amendment to 10 CFR 50.47(a)(2) was proposed to emphasize the predictive nature of the review and to provide that licensing decisions need not include the results of an exercise. The Commission noted that preparedness connotes the actual state of implementation, is important during the life of the plant, and should be treated as an operational inspection matter. The proposed rule change would require that a full-scale exercise be conducted before operation above 5% of rated power and periodically thereafter.

The proposed rule change in 46 FR 61132 provided that in order to grant a low power license, only a finding as to the adequacy of onsite emergency planning and preparedness is required; that is, neither FEMA nor NRC must have evaluated the adequacy and capability of offsite preparedness organizations and plans prior to issuance of a low power license. While the proposed rule would eliminate the need to have any NRC or FEMA review, findings, or determinations on the adequacy of offsite agencies' emergency planning and preparedness, the NRC review of the licensees' onsite response mechanism would necessarily include aspects of some offsite elements: Communications, notification, assistance agreements with local law enforcement, fire protection, and medical organizations, and the like. Some examples, but not an exclusive list, where review of an applicant's emergency plan would involve aspects of some offsite elements may be found in pertinent portions of 10 CFR 50.47(b)(3), (5), (6), (9), and (12).

Extensive comments were received, all of which were evaluated and considered in developing the final rule.

Summary of Public Comments

The Commission received 40 letters commenting on the 46 FR 61134 proposed rule change and 66 letters commenting on the 46 FR 61132 proposed rule change. Many letters commented on both issues within the same letter. For 46 FR 61134, 27 letters opposed the rule change while 11 letters favored the rule change. In 46 FR 61132, 43 letters opposed the rule change, while 18 letters favored the rule change. For both rule changes, commenters favoring the rule changes were typically utilities, legal firms and consulting firms representing utilities, and one State health department. Commenters opposing the rule changes included private citizens, local elected officials from New Hampshire and Suffolk County, New York, an Assistant Attorney General of Massachusetts, an Assistant Attorney General of New Hampshire, and representatives of various public groups.

All of the significant comments favoring the rule changes basically reiterated the Commission's rationale for promulgation of the proposed rule changes that was put forth in the **Federal Register** Notices, 46 FR 61134 and 46 FR 61132.

The following major issues against changing the regulations were raised in specific comments received. These major issues reflect the areas of concern of many commenters.

Issue 1: The NRC's credibility was so undermined by the handling of the TMI accident that the Commission should take pains to avoid even the *appearance* of relaxing safety standards. By relaxing the current emergency preparedness regulations, far more than the prestige of the agency or the Commissioners is at stake; indeed, it is believed that the credibility of NRC is a vital component of emergency preparedness. If another serious accident were to occur, many lives may be saved if people have enough faith in the dedication and truthfulness of the NRC. As things stand, substantial segments of the population are still alienated and cynical in their feelings about the agency to interfere seriously with the workability of any plans for managing an emergency.

Commission Response: When the Commission published the upgraded emergency preparedness regulations in August 1980, the subject of low power operating licenses was not addressed. At that time the Commission did not differentiate as to what emergency planning requirements would be applicable to the period of fuel loading and low power testing. The Commission has now focused on the risks associated with this level of operation and has chosen a level of emergency preparedness appropriate to assure the health and safety of the public at the stage. In doing so, the Commission does not alter the high standards applicable to the review of emergency preparedness at full power.

Issue 2: During low power testing there are higher risks due to unfamiliarity of the plant operators with their particular plant and due to undiscovered design and construction defects.

Commission Response: The Commission agrees that there may be slightly higher risks due to the plant operators having less experience with the plant at this stage and with a potential for undiscovered design and construction defects. However, in the Commission's view, this risk is significantly outweighed by several other factors. First, the fission product inventory during low power testing is much less than during higher power operation due to the low level of reactor power and short period of operation. Second, at low power there is a significant reduction in the required capacity of systems designed to mitigate the consequences of accidents compared to the required capacities under full-power operation. Third, the time available for taking actions to identify accident causes and mitigate accident consequences is much longer than at full power. This means the operators should have sufficient time to prevent a radioactive release from occurring. In the worst case, the additional time available (at least 10 hours), even for a postulated low likelihood sequence which could eventually result in release of the fission products accumulated at low power into the containment, would allow adequate precautionary actions to be taken to protect the public near the site. Weighing all risks involved, the

Commission has determined that the degree of emergency preparedness necessary to provide adequate protection of the public health and safety is significantly less than that required for full-power operation.[1]

Issue 3: The rule changes would eliminate public participation in the review and assessment of exercises before a licensing board.

Commission Response: While it is true that the rule changes will have the likely effect of limiting litigation of the success of exercises in licensing hearings, it is the Commission's view that such assessments are not necessary to make the kind of predictive finding on emergency planning called for by the regulations prior to license issuance. The substantive emergency planning issues now being litigated in license hearings are largely focused on the 16 planning standards found in 10 CFR 50.47(b). These planning standards are unchanged by the rule changes and do not, in themselves, require a successful exercise. Thus the Commission does not regard the exclusion of the exercise generally from the Licensing Board process as affecting in any fundamental way the manner of public participation on prelicensing emergency planning issues. Finally, the rule changes do not preclude public observation of and participation in the exercises themselves (to the extent consistent with the rules and policies of the Commission and the objectives of the exercise) and in the review and assessment critique meetings held after the exercise. The rule changes clarify that the emergency preparedness exercises are not required for a Licensing Board, Appeal Board, or Commission licensing decision. Exercises will still be required before actual power above 5% and commercial operation. The conduct of full-scale exercises early enough in the licensing process to permit the outcome of the exercises to be fully litigated at the hearing is premature. Such exercises are best held at a later time, when the operating and management staff of the plant—who are central figures in an exercise—are in place and trained in emergency functions. The Commission believes that, while the actual exercise is not an issue in a hearing under these rules (except to the extent that an outline for the exercise may be involved), the exercise will be held before full power and all significant deficiencies will be properly addressed.

Issue 4: These rule changes would undermine public confidence in the adequacy of emergency planning, safe operation of the plant, and the licensing process.

Commission Response: As the Commission noted in the **Federal Register** notice which announced the upgraded emergency planning regulations on August 19, 1980 (45 FR 55403) that "The [TMI] accident also showed clearly that onsite conditions and actions, even if they do not cause significant offsite radiological consequences, will affect the way the various State and local entities react to protect the public from any dangers associated with the accident. In order to discharge effectively its statutory responsibilities, the Commission must know that proper means and procedures will be in place to assess the course of an accident and its potential severity, that NRC and other appropriate authorities and the public will be notified promptly, and that adequate protective actions in response to actual or anticipated conditions can and will be taken."

Given that no change is envisioned in the caliber of reviews for full-power licenses, and indeed, more resources in theory would be available, the Commission believes that the final rule changes announced herein do not change this responsibility or diminish in any respect the protection of the public health and safety. While the Commission understands the feelings expressed by these commenters, the Commission wants to state its continued commitment to the adequacy of emergency planning, safe operation of the plant, and in an efficient licensing process. These rule changes should not be cause for concern about this commitment.

Issue 5: Unlike some of the more technical issues, emergency planning is a subject upon which the average citizen is knowledgeable and can make a valuable contribution to the licensing proceedings. This is an important opportunity for public participation. Eliminating this consideration from licensing decisions in effect removes this vital experimental evidence from public scrutiny.

Commission Response: The proposed rule does not eliminate any important substantive aspect of emergency planning from the operating license hearings. Whether an applicant satisfies the requirements of 50.47(a) and 50.47(b) is still an issue that may be raised and litigated in those hearings. In cases where such issues are raised, applicants' and State and local jurisdictions' emergency plans should be available for examination in the hearing process prior to the issuance of an operating license. In addition, an outline of an exercise should also be available in order to assure that the requirement for the conduct of exercises (10 CFR Part 50, Appendix E, Section IV) can or will be met. Moreover, if the actual conduct of an exercise should identify fundamental defects in the way that the emergency plan is conceived such that it calls into question whether the requirements of 10 CFR 50.47 can or will be met, a party to a license proceeding may seek to reopen a concluded hearing or file a petition for action pursuant to 10 CFR 2.206 as appropriate. This is distinct from deficiencies identified by an exercise which only reflect the actual state of emergency preparedness on a particular day in question but which do not represent some basic flaw in emergency planning. Finally, it should be recalled that the full-scale exercises themselves involve participation by local and State governments. Both the NRC and FEMA attempt to make sure that all local and regional concerns expressed by representatives of these governments are fully addressed, and that any deficiencies brought to light are remedied before a full-power license is issued. The underlying feelings expressed by these comments, however, are addressed in the Commission Responses to Issues 3 and 4.

Issue 6: The public knowledge that no offsite protection exists could cause chaos in the event of an incident during fuel loading or low power testing.

Commission Response: Prior to issuing an operating license authorizing low-power testing and fuel loading, the NRC will review the following offsite elements of the applicant's emergency plan:

(a) Section 50.47(b)(3). Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.

(b) Section 50.47(b)(5). Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and followup messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.

(c) Section 50.47(b)(6). Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

[1] The level of risk associated with low-power operation has been estimated by the staff in several recent operating license cases: Diablo Canyon, Docket Nos. 275–OL, 323–OL, San Onofre, Docket Nos. 361–OL, 362–OL, and LaSalle, Docket Nos. 373–OL, 374–OL. In each case the Safety Evaluation Report concluded that low-power risk is several orders of magnitude less than full-power risk. These findings support the general conclusion in the text that a number of factors associated with low-power operation imply greatly reduced risk compare with full power.

(d) Section 50.47(b)(8). Adequate emergency facilities and equipment to support the emergency response are provided and maintained.[3]

(e) Section 50.47(b)(9). Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

(f) Section 50.47(b)(12). Arrangements are made for medical services for contaminated injured individuals.

(g) Section 50.47(b)(15). Radiological emergency response training is provided to those who may be called on to assist in an emergency.[3]

Knowing that the above elements of the applicants emergency plan have been reviewed by NRC should assure the public that, for low-power testing and fuel loading, adequate protective measures could and would be taken in the event of an accident.

Issue 7: The rule changes are fundamentally not in the best interest of the public health and safety but obviously in the interest of the utilities.

Commission Response: As explained in previous Responses, the Commission is convinced that the rule changes will not compromise the health and safety of the public. The Commission considers that the rule changes provide flexibility in its licensing procedures, thereby meeting its obligation to the public to conduct its business in a timely and efficient manner. This obligation includes the establishment of an efficient licensing process, while not adversely affecting the public health and safety.

Issue 8: The proposed rule changes contradict previous TMI policy statements.

Commission Response: In developing the upgraded emergency preparedness regulations (45 FR 55402 dated August 19, 1980) one of the policy statements that the Commission made was "that onsite and offsite emergency preparedness as well as proper siting and engineered design features are needed to protect the health and safety of the public [and] as the Commission reacted to the accident at Three Mile Island, it became clear that the protection provided by siting and engineered design features must be bolstered by the ability to take protective measures during the course of an accident."

This rulemaking will in no way deviate from previous policy statements but in fact will add flexibility and efficiency to the licensing process.

Issue 9: Include § 50.47(b)8 and § 50.47(b)15 in evaluating the coordination of offsite and onsite emergency preparedness. These elements require that:

(a)(8) Adequate emergency facilities and equipment to support the emergency response are provided and maintained, and

(b)(15) Radiological emergency response training is provided to those who may be called on to assist in an emergency.

Commission Response: The Commission agrees with this comment. See Commission Response to Issue #8.

Issue 10: The rule changes effectively exclude the public from the decisionmaking process on a matter of primary public concern, and create apprehension in the public mind as to whether "preparedness" will be a reality even after a full-scale exercise before operation above 5% of rated power. The public is unlikely to be granted a special hearing, before full-power operation is granted a utility, in order to assess the actual state of preparedness.

Commission Response: It is true that special hearings will not, in a typical case, be held following the full-scale exercise. The public should recognize that the Commission does not intend to authorize the issuance of a full-power operating license if there has been a full-scale exercise which raises serious and significant deficiencies which have not been compensated for and which go to the fundamental nature of the emergency plan itself. Such a deficiency calls into question whether reasonable assurance may be found that public health and safety will be adequately protected in a radiological emergency. However, some deficiencies may be found that only reflect the actual state of preparedness which may be easily remedied; these types of deficiencies should not delay licensing action. See 10 CFR 50.47(c).

Issue 11: No rationale sustains the requirement of offsite emergency preparedness for small research reactors possessing a fission product inventory equivalent to that generated up to 5% by a large reactor while eliminating offsite emergency preparedness for the large reactor.

Commission Response: Although research reactors present an inherently smaller risk than power reactors, they do not possess the accident mitigation features (e.g., large containments) required for power reactors. In addition, research reactors are often located in high population density areas. It is therefore prudent to have an offsite emergency plan for these reactors.

Summary: The Commission has evaluated all public comments, and has also fully considered the risks of operating a nuclear power reactor at low power. The risks of operating a power reactor at low power are significantly lower than the risks of operating at full power because: first, the fission product inventory during low power testing is much less than during higher power operation due to the low level of reactor power and short period of operation; second, at low power there is a significant reduction in the required capacity of systems designed to mitigate the consequences of accidents compared to the required capacities under full-power operation; and third, the time available for taking actions to identify accident causes and mitigate accident consequences is much longer than at full power. This means the operators should have sufficient time to prevent a radioactive release from occurring. In the worst case, the additional time available (at least 10 hours), even for a postulated low likelihood sequence which eventually results in release of the fission products accumulated at low power into the containment, would allow adequate precautionary actions to be taken to protect the public near the site. On balance, the Commission has concluded that the rule changes are technically justifiable and will enhance the efficiency of the licensing process, without adversely affecting the public health and safety and therefore should be promulgated.

Commissioner Gilinsky's Separate Opinion

I disapprove both parts of the proposed amendment.

One part of the rule provides that no NRC or FEMA findings whatsoever concerning the state or adequacy of offsite emergency preparedness shall be necessary prior to issuance of a low power license. As I stated in my disapproval of the proposed rule, there should be some offsite preparedness, especially if there is to be an extended period of low power operation. Moreover, emergency preparedness for full power should not be a hurried, last-minute affair. Some of the steps required for full-power should already be in place at the low power stage.

The other part of the rule excludes consideration of emergency exercises in an operating license proceeding, thereby eliminating an opportunity for public participation in this phase of decisionmaking. The exercises never completely follow the plan. And this area happens to be one in which the nuclear plant's neighbors have special competence, greater in some respects than that of NRC or FEMA. Their comments can be particularly useful. These need not be presented in formal hearings but we should have some means to receive and consider them. I would have modified the final rule to provide for such a brief comment period before NRC issuance of an operating license.

[3] Added in response to public comment.

I would also note that the Simpson Report shows that FEMA findings will cause delays in only 2 plants: Shoreham and Byron 1. These delays are based on the applicants' construction dates. If NRC estimates are used, this amendment would have no effect on the dates for issuing operating licenses.

Commissioner Ahearne's Additional Views

In response to Commissioner Gilinsky's comment that "the rule provides that no NRC of FEMA findings whatsoever concerning the state or adequacy of offsite emergency preparedness shall be necessary prior to issuance of a low power license," I would note "the NRC review of the licensees' onsite response mechanism would necessarily include aspects of some offsite elements: communications, notification, assistance agreements with local law enforcement, fire protection, and medical organizations, and the like" (Statement of considerations for this rule at 2).

With respect to his other point concerning consideration in the operating license proceeding, (1) it is important to hold the exercise close to completion of the plant since the operating personnel will then be on site and be able to learn from the experience, and the exercise will be more realistic since hardware and procedures will be closer to completion; and (2) there are public meetings after each drill and the state, local government and other emergency people do participate in these meetings and do provide comments and criticism.

National Environmental Policy Act Consideration

Pursuant to 10 CFR 51.5(d)(3) of the Commission's regulations, an environmental impact appraisal need not be prepared in connection with the subject final amendment because there is no substantive or significant environmental impact.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. The proposed rule changes concern a clarification of the elements and findings necessary for the issuance of an operating license for nuclear power plants licensed pursuant to Section 103 and 104b of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2133, 2134b. The electric utility companies owning and operating these nuclear power plants are dominant in their service areas, and do not fall within the definition of a small business found in Section 3 of the Small Business Act, 15 U.S.C. 632, or within the Small Business Size Standards set forth in 13 CFR Part 121. Accordingly, there is no significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act of 1980.

Paperwork Reduction Act Statement

Pursuant to the provisions of the Paperwork Reduction Act of 1980 (Pub. L. 96–511), the NRC has made a preliminary determination that these rule changes do not impose new recordkeeping, information collection, or reporting requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 552 and 553 of title 5 of the United States Code, notice is hereby given that the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50 is published as a document subject to codification. These rules are made immediately effective because restrictions on applicants are being relieved.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting critieria, and Reporting requirements.

47 FR 30452
Published 7/14/82
Effective 10/12/82

Protection of Employees Who Provide Information

See Part 19 Statements of Consideration

47 FR 30459
Published 7/14/82
Effective 8/13/82

10 CFR Part 50

Codes and Standards for Nuclear Power Plants

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is amending its regulations to incorporate by reference the Summer 1981 Addenda of the ASME Boiler and Pressure Vessel Code. The sections of the ASME Code being incorporated provide rules for the construction of nuclear power plant components. Adoption of these amendments will permit the use of improved methods for construction.

EFFECTIVE DATE: August 13, 1982.

FOR FURTHER INFORMATION CONTACT: Mr. E. Baker, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 443–5892.

SUPPLEMENTARY INFORMATION: On February 3, 1982 the Nuclear Regulatory Commission published in the **Federal Register** (47 FR 5010) proposed amendments to its regulation, 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The proposed amendments revised § 50.55a to incorporate by reference the Summer 1981 Addenda to Section III of the ASME Boiler and Pressure Vessel Code.

Some of the changes effected in the addenda which are incorporated through the adoption of the amendments are:

1. Article NCA–3000 of Section III was revised to add a requirement that N, NA, and NPT certificate holders be responsible for documentation of the review and approval of materials used by them and the preparation, accumulation, control, and protection of required records while in their custody. Also, the owner must review the materials documentation to verify that the Code Edition, Addenda, and Code Cases used satisfy NCA–1140 and are acceptable to the regulatory and enforcement authorities.

2. Article NCA–8000 of Section III was revised editorially to make it easier to read and understand. Also, two new provisions, NCA–8240(b) and NCA–8430, were added. NCA–8240(b) describes the provisions that must be met if a name plate is to be removed from an item which has been installed in a nuclear power plant system. NCA–8430 describes alternatives for compiling the Code Data Reports so that they can be traced from the Data Report Form.

3. Article NB–3500 of Section III was revised to remove the nomenclatures "normal duty valve," "severe duty valve," "standard valve," and "expected cycle," but there were no technical changes associated with dropping these nomenclatures.

4. Article NB–6000 was given an extensive editorial rewrite which mainly reorganized the paragraphs into a more comprehensive form. Also added were a subarticle on special test procedures and a subparagraph allowing the hydrostatic testing of pump and valve subassemblies.

Interested persons were invited to submit written comments for consideration in connection with the proposed amendement by May 5, 1982. One information/editorial comment on the supplementary information section of the proposed rule was received but no significant comments were received.

The necessary editorial corrections were made. The Commission has adopted the proposed amendment with a minor editorial revision to accommodate the incorporation by reference of the ASME Code.

Paperwork Reduction Act Statement

The recordkeeping requirements contained in this Regulation have been approved by the Office of Management and Budget; OMB approval No: 3150–0011.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121. Since these companies are dominant in their service areas, this rule does not fall within the purview of the Act.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear Power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter 1, Code of Federal Regulations, Part 50 are published as a document subject to codification.

47 FR 31674
Published 7/22/82
Effective 7/22/82

10 CFR Part 50

Communications Procedures; Clarifying Amendment

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to inform applicants and licensees that prior to submitting any communications in microform, they shall obtain specifications and copy requirements from the Nuclear Regulatory Commission. These amendments are issued as the result of a recommendation to clarify the requirements for submission of documents by licensees to allow and encourage use of microform. It was anticipated that the use of microform would result in the reducing of the volume of paper copies submitted to the NRC as well as relieving the burden of on the licensees of submitting large numbers of paper copies.

EFFECTIVE DATE: July 22, 1982.

FOR FURTHER INFORMATION CONTACT: Steve Scott, Chief, Document Management Branch, Division of Technical Information and Document Control, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492–8585.

SUPPLEMENTARY INFORMATION: In February 1979, as part of a survey of the NRC's Public Document Room activities, the Office of Inspector and Auditor recommended that the Executive Director for Operations consider clarifying the requirements for submission of documents by licensees to allow and encourage use of microform. It was anticipated that the use of microform would result in reducing the volume of paper copies submitted to the NRC as well as relieving the burden on the licensees of submitting large numbers of paper copies. A canvass of licensees, conducted by the Nuclear Records Management Association, revealed that they favored the option of submitting required material on microform. Therefore, the NRC is issuing this rule to provide instructions so that licensees can obtain guidance on how to submit microforms.

Because this is a nonsubstantive amendment dealing with minor procedural matters, good cause exists for finding that the notice and comment procedures of the Administrative Procedure Act (5 U.S.C. 553) are unnecessary and for making the amendment effective July 22, 1982.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, and Reporting requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendment to Title 10, Chapter I, Code of Federal Regulations, Part 50, is published as a document subject to codification.

47 FR 40536
Published 9/15/82
Effective 9/15/82

10 CFR Part 50

Emergency Planning and Preparedness; Correction

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule; correction.

SUMMARY: This document corrects a recently published final rule concerning emergency preparedness exercises. This correction is necessary to reinsert a footnote inadvertantly omitted in the document published July 13, 1982 (47 FR 30232).

FOR FURTHER INFORMATION CONTACT: Michael T. Jamgochian, Human Factors Branch, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 443–5942.

The following corrections are made in the document published on July 13, 1982 (47 FR 30232) amending 10 CFR 50.47:

1. On Page 30236, column one, footnote number 1 was inadvertantly omitted from the revised introductory text of § 50.47(b). The footnote reference should appear directly after the introductory text of paragraph (b). Footnote 1 reads as follows:

These standards are addressed by specific criteria in NUREG–0654; FEMA–REP–1 entitled "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in support of Nuclear Power Plants—for Interim Use and Comment" January 1980.

47 FR 41336
Published 9/20/82
Effective 9/20/82

Minor Clarifying Amendments

See Part 1 Statements of Consideration

47 FR 55203
Published 12/8/82
Effective 12/1/82

10 CFR Part 50

Regional Licensing Program; Fort St. Vrain Nuclear Generating Station

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The NRC is amending its regulations concerning the domestic licensing of utilization facilities to provide information concerning the further implementation of NRC's regional licensing program. This amendment states that authority and responsibility for implementing selected parts of NRC's nuclear reactor licensing program pertaining solely to the Fort St. Vrain Nuclear Generating Station have been assigned and delegated to the Regional Administrator of Region IV and specifies where communications and applications relating to that facility should be sent. The amendment is necessary to inform the licensee and the public of current NRC practice and organization.

EFFECTIVE DATE: December 1, 1982.

FOR FURTHER INFORMATION CONTACT: Darrell G. Eisenhut, Director, Division of Licensing, Office of Nuclear Reactor Regulations, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: (301) 492–7672.

SUPPLEMENTARY INFORMATION: The Commission is conducting a regionalization program involving certain licensing activities pertaining to nuclear reactors. Fort St. Vrain Nuclear Generating Station (Utility Licensee: Public Service Company of Colorado, License No. DPR–34, Docket No. 50–267) has been selected as the first nuclear reactor for which implementation of selected licensing activities will be transferred to a region. The responsible region is Region IV, U.S. Nuclear Regulatory Commission, 611 Ryan Plaza Drive, Suite 1000, Arlington, Texas 76011. The general delegation of authority for the Regional Administrators is described in NRC Manual Chapter 0128. Pursuant to the general delegation of authority, the Executive Director for Operations and the Director of Nuclear Reactor Regulation assigned certain licensing responsibilities with respect to the Fort St. Vrain Nuclear Generating Station to the Regional Administrator of Region IV. Copies of the delegations of authority have been placed in the Commission's public document rooms at 1717 H Street, NW., Washington, D.C., at the Region IV Office, 611 Ryan Plaza Drive, Suite 1000, Arlington, Texas, and at the Greeley Public Library, City Complex Building, Greeley, Colorado 80631, the local public document room for the Fort St. Vrain Nuclear Generating Station, where they are available for inspection and copying by the public.

The revised regulations, 10 CFR 50.4, are intended to inform licensees and the public of current NRC practices and organization. As amended, § 50.4 states that inquiries concerning NRC regulation of the Fort St. Vrain Nuclear Generating Station and certain types of communications and reports pertaining to that facility should be sent to the Region IV Office and specifies the proper address. The amendment does not change the requirements for direct communication between the licensee and Region IV. Changes to other affected parts of the Commission's regulations, such as Part 2, will be made in the near future.

Since this amendment is nonsubstantive and relates to matters of agency organization and procedure, the notice and comment procedures of the Administrative Procedure Act (5 U.S.C. 553) do not apply and good cause exists for making the amendment effective on December 1, 1982.

Paperwork Reduction Act Statement

This rule contains no new or amended requirements for record keeping, reporting, plans or procedures, applications or any other type of information collection.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting requirements.

Under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended and 5 U.S.C. 552 and 553, the following amendment to 10 CFR Part 50 is published as a document subject to codification.

47 FR 57670
Published 12/28/82
Effective 12/28/82

10 CFR part 50

Filing of Copies of Changes to Emergency Plans and Procedures

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to reduce the number of copies of changes to nuclear power plant emergency plans and procedures. The total number of copies to be submitted will be reduced from 13 to 3. The Commission has determined that 3 copies will be sufficient for processing purposes. These amendments will reduce the regulatory burden on the affected licensees.

DATE: The effective date of this rule will be December 28, 1982.

FOR FURTHER INFORMATION CONTACT: Kenneth E. Perkins, Chief, Incident Response Branch, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555 (Telephone 301–492–7361).

SUPPLEMENTARY INFORMATION: On August 19, 1980, the Nuclear Regulatory Commission published in the Federal Register (45 FR 55402) amendments to its regulations for the upgrading of emergency planning and preparedness. The effective date for those regulations was November 3, 1980.

In those regulations, § 50.54(q) required licensees to furnish three copies of changes to the emergency plan and emergency plan implementing procedures to NRC Regional Administrators and ten copies to the Director, Office of Nuclear Reactor Regulation. The amendment contained in this notice reduces to 3 the total number of copies the licensee is required to submit (one copy to be sent to the appropriate Regional Administrator and two copies to NRC Headquarters).

Because these amendments relate solely to procedural matters, the Commission has found that good cause exists for omitting notice of proposed rulemaking and public procedure thereon, as unnecessary. Since the amendment relieves licensees from restrictions under regulations currently in effect, it is effective upon publication.

Paperwork Reduction Act Statement

The information collection requirements contained in this regulation have been approved by the Office of Management and Budget; OMB approval No. 3150–0011.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50 are published as a document subject to codification.

48 FR 1026
Published 1/10/83
Effective 3/11/83

10 CFR Part 50

Reporting of Changes to the Quality Assurance Program

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to require each holder of a nuclear power plant or fuel reprocessing plant construction permit or operating license (1) to inform the Commission in writing of quality assurance program changes that affect the description of the quality assurance program described or referenced in its Safety Analysis Report and accepted by the Commission, and (2) to clarify the requirement concerning implementation of the accepted quality assurance program. In the past, existing regulations did not specifically include a requirement that changes to the accepted quality assurance program be reported and some licensees changed their quality assurance programs without informing the Commission. This resulted in some unacceptable quality assurance programs. The amendments will assure that when licensees and construction permit holders reduce their commitments in their quality assurance program descriptions accepted by the Commission, they submit the changes to the Commision and receive its approval before implementing the changes.

EFFECTIVE DATE: March 11, 1983.

FOR FURTHER INFORMATION CONTACT: William L. Belke, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 492–4512.

SUPPLEMENTARY INFORMATION: The quality assurance (QA) requirements of 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," constitute a cornerstone of the Commission's "defense-in-depth" concept for ensuring safe operation of nuclear power plants and fuel reprocessing plants.

Because of the importance of the QA program as a management tool to attain objectives important to nuclear safety, the NRC staff conducts extensive reviews during the licensing process to ensure that the applicant's QA program description satisfies 10 CFR Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." Once the NRC staff has accepted it, the QA program description becomes a principal inspection and enforcement tool in ensuring that the permit holder or licensee is in compliance with all NRC quality assurance requirements for protecting the public health and safety.

As indicated in 10 CFR 50.34(a)(7), "Contents applications; technical information," the Preliminary Safety Analysis Report (PSAR) must include "a description of the quality assurance program to be applied to the design, fabrication, construction, and testing of the structures, systems, and components of the facility." Similarly, § 50.34(b)(6)(ii) requires that the Final Safety Analysis Report (FSAR) describe "managerial and administrative controls to be used to assure safe operation" and that it "include a discussion of how the applicable requirements of Appendix B [Quality Assurance Criteria] will be satisfied." The QA programs described in the Safety Analysis Reports are intended to represent the QA programs actually being applied in practice.

Because existing regulations do not specifically include a requirement that changes to the accepted QA program be reported to the Commission, some licensees have been changing their QA programs without informing the Commission. In a few cases this has resulted in QA programs which were not acceptable to the NRC staff and which did not conform to all aspects of the NRC regulations. The primary concern with the current situation is that unreported changes to the QA program might diminish the scope of the program permitting significant deficiencies to arise in the design, fabrication, construction, or operation of the facility. This could result in increased risk to the public health and safety.

The final amendments require that nuclear power plant and fuel reprocessing plant construction permit holders and licensees implement the accepted QA program described or referenced in the Safety Analysis Report, provide a current description of the program as it is implemented, and submit all changes to the accepted program description (as required by 10 CFR 50.34(a)(7) or 50.34(b)(6)(ii)) to the NRC for review.

Although NRC presently reviews QA topical report program descriptions of the licensee's or construction permit holder's principal contractors (architect-engineer, nuclear steam supply system vendor, constructor, and construction manager when other than the constructor) submitted to it, the requirements of Appendix B of 10 CFR Part 50 clearly state that the licensee or permit holder has responsibility for the establishment and execution of the QA program. Therefore, commensurate with the requirements of Appendix B of 10 CFR Part 50, licensees and construction permit holders must ensure that their principal contractors' QA program description changes are reported to NRC in writing. In addition, when subcontractors make significant changes that amount to changes in the construction permit holder's or licensee's QA program or in the principal contractor's QA program, the NRC is to be notified in writing.

Licensees must submit to the NRC at least annually (under 10 CFR 50.71), and permit holders within 90 days, those changes to the QA program description that do not reduce the commitments in the program description previously accepted by the NRC. In all cases, licensees and permit holders making changes to the QA program description that do reduce the commitments, must submit the changes to NRC and receive NRC approval before implementing the changes.

The Commission will evaluate submitted changes to determine if the revised QA program description is in accord with the Commission's QA requirements in Appendix B of 10 CFR Part 50 and Safety Analysis Report QA program description commitments previously accepted by the NRC. The Commission normally will inform the construction permit holder, licensee, or QA topical report organization within 60 days of receipt of the change about the result of this evaluation commensurate with the 10 CFR 50.71 annual reporting requirement for licensees or 90-day reporting requirement for permit holders. Licensees, permit holders or QA topical report organizations submitting changes requiring NRC approval before implementation will also normally be informed of the results of the evaluation within 60 days.

Discussion of Comments

On July 2, 1981, the NRC published in the Federal Register (46 FR 34595) proposed amendments to 10 CFR 50.54 and 50.55 for reporting of changes to QA programs. Numerous comments were received, all of which were evaluated in developing the final rule. The following discussion highlights the major issues that were raised by the commenters and their resolution (the comments received, and a fuller discussion of their resolution—are available for review in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C. 20555).

One commenter recommended that the rule be revised to clarify that licensees may make changes to a previously submitted QA program description provided the change does

not decrease the scope of the program or effectiveness of the program's controls.

To preclude potential confusion or misinterpretation of the terms "scope" or "effectiveness," §§ 50.54 and 50.55 of the rule have been revised to require licensees to submit to the NRC at least annually (under 10 CFR 50.71), and permit holders within 90 days, those changes to the quality assurance program description that do not reduce the commitments in the program description previously accepted by the NRC. In all cases, changes to the Safety Analysis Report quality assurance program description that do reduce those commitments must be submitted to NRC and receive NRC approval before implementation.

Some commenters suggested that the 10 CFR 50.54 and 50.55 rule changes should be consolidated into section II of Appendix B to 10 CFR Part 50 and that the existing regulations in §§ 50.34, 50.59, and 50.71 be allowed to satisfy the intent of the rule's reporting requirements.

No changes to the rule were made in response to these comments. The Commission believes that to consolidate the § 50.54 and § 50.55 rule changes or to rely on the existing reporting requirements of §§ 50.34, 50.59, or § 50.71 would leave a regulatory gap because there would be no requirement for the reporting of QA program changes as a condition of the construction permit or operating license.

10 CFR 50.71 now requires the submittal of all changes necessary to reflect information and analyses submitted to the Commission by the licensee (or prepared by the licensee pursuant to Commission requirements) since the submission of the original Final Safety Analysis Report (FSAR) or, as appropriate, the last updated FSAR. The updated FSAR is to be revised to include the effects of: All changes made in the facility or procedures as described in the FSAR; all safety evaluations performed by the licensee either in support of requested license amendments or in support of conclusions that changes did not involve an unreviewed safety question; and all analyses of new safety issues performed by or on behalf of the licensee at the Commission's request. The updated information is to be appropriately located within the FSAR.

Under 10 CFR 50.71, it would be acceptable to submit annual revisions to the QA program for plants already licensed for operation, provided the changes do not reduce the commitments in the program description. However, if a licensee does make changes to the QA program description that reduce the commitments in the program description, these changes must be submitted to NRC and receive NRC approval before implementation.

In accordance with the Commission's licensing review policies, the acceptance criterion in effect since issuance of Revision 1 of the Standard Review Plan in early 1979 applies to new applications for construction permits and operating licenses and to the periodic review of QA topical reports. It is not applicable to all permit holders and to all operating plant licensees whose construction permits or operating license applications were reviewed before 1979, nor is such a commitment, once made, subject to the full range of enforcement options. This lack of enforceability exists because current regulations do not specifically include a requirement that changes to the QA program that affect the description of the QA program in the Safety Analysis Report be submitted to the NRC for review. Additionally, other than in footnote 1 to Appendix B of 10 CFR Part 50, there is no explicit requirement that the accepted QA program be implemented as a condition of the construction permit or license.

One commenter suggested that the proposed amendment to 10 CFR 50.55 be modified to be consistent with the advance notice of proposed rulemaking published December 11, 1980 (45 FR 81602), dealing with design and other changes in nuclear power plant facilities after issuance of a construction permit.

The amendment to § 50.55 will precede the amendment noted above being developed through the advance notice of proposed rulemaking. However, the Commission will act to assure consistency between the two with respect to facility QA program description reporting requirements.

One commenter recommended that the final rule be applicable to fuel reprocessing plants.

The Commission has accepted this suggestion in order that it be commensurate with the intent and requirements of Appendix B to 10 CFR Part 50. The rule has been revised to state that it is applicable to fuel reprocessing plants.

Several commenters suggested that the final rule be applicable to QA topical report descriptions accepted by NRC from a licensee's or construction permit holder's prime contractors.

Although NRC presently reviews QA topical reports submitted to it, the requirements of Appendix B of 10 CFR Part 50 clearly state that the licensee or permit holder has responsibility for the establishment and execution of the QA program. Thus, commensurate with the requirements of Appendix B of 10 CFR Part 50, licensees and construction permit holders must ensure that their principal contractors' (architect-engineer, nuclear steam supply system vendor, constructor, and construction manager when other than the constructor) QA program description changes are reported to NRC in writing. In addition, when subcontractors make significant changes that amount to changes in the construction permit holder's or licensee's QA program or in the principal contractor's QA program, NRC must be notified in writing. This should not impose a heavy burden on a licensee or construction permit holder because, if a change has been made to a QA topical report description by a licensee's or construction permit holder's principal contractor and submitted to NRC by the principal contractor together with an explanation of the reasons for the change, the licensee or construction permit holder need only notify NRC that the referenced principal contractor's QA topical report has been changed and submitted to NRC by the principal contractor and need not forward a letter explaining the change.

It was also suggested that NRC Resident Inspectors be allowed to review QA program changes in order to determine whether the program has been weakened.

Because of the Resident Inspectors' diversified and demanding workloads, the Commission believes that its best interests would be expeditiously served by having reviews of QA program description changes performed in designated NRC Regional Offices or Office of Inspection and Enforcement, as necessary and appropriate.

It was also suggested that QA program description changes should be reviewed by the NRC's Office of Nuclear Reactor Regulation (Quality Assurance Branch) in lieu of the NRC Regional Offices, since licensees initially obtain approval of their quality assurance program descriptions from that NRC unit.

The Commission has not accepted this suggestion. The Commission will develop internal review procedures to ensure that QA program description changes will be reviewed by the NRC office possessing the necessary QA expertise and resources. In all cases, copies of all QA program description changes will be provided to the appropriate NRC Regional Office, appropriate NRC Resident Inspector, and NRC Office of Inspection and Enforcement for their review and to solicit their input regarding the changes.

Finally, several commenters suggested that the rule be clarified to avoid the specific misinterpretation that written evaluations could be required for every revision of QA implementing methods and procedures, and for changes that correct spelling, punctuation, or items that are editorial in nature.

The rule has been revised to clarify the requirement for written evaluations. Generally, changes to quality assurance program implementing procedures, instructions, methods, and other documents do not require evaluations or submittal to NRC. Only when these changes involve a change to the QA program as described in the Safety Analysis Report would NRC have to be notified and would a forwarding letter have to be submitted. This forwarding letter will provide the basis for a Commission determination concerning compliance with the criteria in Appendix B of 10 CFR Part 50. Consequently, all affected pages of the Safety Analysis Report that describe the quality assurance program must be submitted to NRC in order to ensure that the copy of the quality assurance program description retained by NRC remains current.

Paperwork Reduction Act

The application, reporting, and recordkeeping requirements contained in this Regulation have been approved by the Office of Management and Budget; OMB approval No: 3150–0011.

Regulatory Flexibility Act Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not have a significant economic impact on a substantial number of small entities. This final rule affects only the licensing and operation of nuclear power plants and fuel reprocessing plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121. No small entity commented that the proposed rule would affect it.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50 are published as a document subject to codification.

≫ 48 FR 2729
Published 1/21/83
Effective 2/22/83

10 CFR Part 50

Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is amending its regulations applicable to nuclear power plants to clarify and strengthen the criteria for environmental qualification of electric equipment important to safety. Specific qualification methods currently contained in national standards, regulatory guides, and certain NRC publications for equipment qualification have been given different interpretations and have not had the legal force of an agency regulation. This amendment codifies the environmental qualification methods and criteria that meet the Commission's requirements in this area.

EFFECTIVE DATE: February 22, 1983.

FOR FURTHER INFORMATION CONTACT: Satish K. Aggarwal, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 443–5946.

SUPPLEMENTARY INFORMATION:

Previous Notice

On January 20, 1982, NRC published in the Federal Register a notice of proposed rulemaking on environmental qualification of electric equipment for nuclear power plants (47 FR 2876). The comment period expired March 22, 1982. A total of 69 comment letters raising 10 major issues were received by April 6, 1982. An additional 10 comment letters were received by April 21, 1982, but no new issues were raised. The major issues are discussed below.

Nature and Scope of the Rulemaking

Nuclear power plant equipment important to safety must be able to perform its safety functions throughout its installed life. This requirement is embodied in General Design Criteria 1, 2, 4, and 23 of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities"; in Criterion III, "Design Control," and Criterion XI, "Test Control," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50; and in paragraph 50.55a(h) of 10 CFR Part 50, which incorporates by reference IEEE 279–1971,[1] "Criteria for Protection Systems for Nuclear Power Generating Stations." This requirement is applicable to equipment located inside as well as outside the containment.

The NRC has used a variety of methods to ensure that these general requirements are met for electric equipment important to safety. Prior to 1971, qualification was based on the fact that the electric components were of high industrial quality. For nuclear plants licensed to operate after 1971, qualification was judged on the basis of IEEE 323–1971. For plants whose Safety Evaluation Reports for construction permits were issued since July 1, 1974, the Commission has used Regulatory Guide 1.89, "Qualification of Class 1E Equipment for Light-Water-Cooled Nuclear Power Plants," which endorses IEEE 323–1974,[2] "IEEE Standard for Qualifying Class IE Equipment for Nuclear Power Generating Stations," subject to supplementary provisions.

Currently, the Commission has under way a program to reevaluate the qualification of electric equipment in all operating nuclear power plants. As a part of this program, more definitive criteria for environmental qualification of electric equipment important to safety have been deveolped by the NRC. A document entitled "Guidelines for Evaluating Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors" (DOR Guidelines) was issued in November 1979. In addition, the NRC has issued NUREG–0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," which contains two sets of criteria: the first for plants originally reviewed in accordance with IEEE 323–1971 and the second for plants reviewed in accordance with IEEE 323–1974.

By its Memorandum and Order CLI–80–21 dated May 23, 1980, the Commission directed the staff to proceed with a rulemaking on environmental qualification of safety-related equipment and to address the question of backfit. The commission also directed that the DOR Guidelines and NUREG–0588 form the basis for the

[1] Incorporation by reference approved by the Director of the Office of Federal Register on January 1, 1982. Copies may be obtained from the Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, N.Y. 10017.

[2] Copies may be obtained from the Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, N.Y. 10017.

requirements licensees and applicants must meet until the rulemaking has been completed. This rule is based on the DOR Guildelines and NUREG–0588. The Commission recognizes the qualification efforts of the industry as a result of CLI–80–21. Therefore, the rule provides that requalification of electric equipment will not be required by applicants for and holders of operating licenses for nuclear power plants previously required by NRC to qualify equipment in accordance with DOR Guidelines or NUREG–0588 (Category I or II). Category I requirements of NUREG–0588, which supplement the recommendations of and apply to equipment qualified in accordance with IEEE 323–1974, apply to nuclear power plants for which the construction permit safety evaluation report was issued after July 1, 1974. Category II requirements, which supplement the recommendations of and apply to equipment qualified in accordance with IEEE 323–1971, apply to nuclear power plants for which the construction permit safety evaluation report was issued prior to July 1, 1974.

In CLI–80–21, the Commission stated that unless there were sound reasons to the contrary, replacement parts should be qualified to the standards set forth in Category I of NUREG–0588 or IEEE 323–1974. The Commission reaffirms that position in this rulemaking. Such qualification constitutes compliance with the provisions of paragraph 50.49(1). The Commission's position is designed to promote the policy of upgrading the environmental qualification and reliability of installed electric equipment. Situations may arise, however, in which such upgrading will not be feasible or compatible with overall plant safety. Licensee must review each situation on a case-by-case basis to determine that "sound reasons to the contrary" do exist to justify an exception from upgrading. Examples of acceptable "sound reasons to the contrary" will be included in Regulatory Guide 1.89.

The dates specified in this rule for completion of environmental qualification of electric equipment important to safety apply to all licensees and applicants and supersede any date previously imposed. No changes to licenses or technical specifications are necessary to reflect these new completion dates.

The scope of the final rule covers that portion of equipment important to safety commonly referred to as "safety-related" (which the Commission interprets as essentially "Class 1E" equipment defined in IEEE 323–1974), and nonsafety-related electric equipment whose failure under postulated environmental conditions could prevent the satisfactory accomplishment of required safety functions by safety-related equipment. Safety-related structures, systems, and components are those that are relied upon to remain functional during and following design basis events to ensure (i) the integrity of the reactor coolant pressure boundary, (ii) the capability to shut down the reactor and maintain it in a safe shutdown condition, and (iii) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines of 10 CFR Part 100. Design basis events are defined as conditions of normal operation, including anticipated operational occurrences; design basis accidents; external events; and natural phenomena for which the plant must be designed to ensure functions (i) through (iii) above. Also covered in the scope of the final rule is certain postaccident monitoring equipment specified as "Category 1 and 2," in Revision 2 of Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident."

Included in the final rule are specific technical requirements pertaining to (a) qualification parameters, (b) qualification methods, and (c) documentation. Qualification parameters include temperature, pressure, humidity, radiation, chemicals, and submergence. Qualification methods include (a) testing as the principal means of qualification and (b) analysis in combination with partial type test data or operating experience. The final rule requires that the qualification program include synergistic effects, radiation, environmental conditions and margin considerations. Also, a record of qualification must be maintained. Proposed Revision 1 to Regulatory Guide 1.89, which has been issued for public comment, describes methods acceptable to the NRC for meeting the provisions of this rule and includes a list of typical equipment covered by it. Revision 1 to Regulatory Guide 1.89 will be issued after resolution of public comments.

NRC will generally not accept analysis alone in lieu of testing. Experience has shown that qualification of equipment without test data may not be adequate to demonstrate functional operability during design basis event conditions. Paragraph 50.49(f) provides four methods for qualification. Testing will be preferred. To ensure integrity of a testing program, the Commission expects that the same piece of equipment will be used throughout the complete test sequence.

The final rule requires that each holder of an operating license provide a list of electric equipment important to safety within the scope of this rule previously qualified based on testing, analysis, or a combination thereof, and a list of equipment that has not been qualified. These lists and the schedule for completion of qualification of electric equipment must be submitted by May 20, 1983.

The general requirements for seismic and dynamic qualification for electric equipment are contained in the General Design Criteria and are not included within the scope of this rule. Further guidance is provided in Regulatory Guide 1.100, "Seismic Qualification of Electric Equipment for Nuclear Power Plants," (Revision 1) and NUREG–0800, "Standard Review Plan." NRC is considering future rulemaking concerning requirements for the environmental qualification of electric equipment important to safety and the requirements for seismic and dynamic qualification of electric equipment.

Comments On The Proposed Rule

The Commission received and considered the comments on the proposed rule contained in the 69 letters received from the public by April 6, 1982. Copies of those letters and a staff response to each comment are available for public inspection and copying for a fee at the Commission's Public Document Room at 1717 H Street NW., Washington, D.C.

The major issues raised by the comments and NRC staff responses are as follows:

(1) Seismic and Dynamic Qualification—Paragraph 50.49(c)

Issue: Seismic and dynamic qualifications are an integral part of environmental qualification. It is therefore inappropriate to codify these requirements separately.

Response: Electric equipment at operating nuclear power plants was generally qualified for environmental and seismic stresses separately, i.e., by using separate prototypes for environmental and seismic qualification tests. The Commission has decided, after considerable deliberation, to pursue the issue of seismic and dynamic qualification separately at a future date. A future seismic rule may not require retesting for environmental stresses because a single prototype was not used during the original qualification. Also, the Commission has concluded that protection of electric equipment important to safety against other natural phenomena and external events should not be within the scope of this rule.

(2) Scope—Cold Shutdown Requirement—Paragraph 50.49(b)

Issue: The rule introduces a new

requirement to qualify "equipment needed to complete one path of achieving and maintaining a cold shutdown condition." A change of this magnitude, at this advanced stage of the industry's qualification effort, most certainly introduces significant new costs and obligations with no demonstrated improvement in safety.

Response: Regulatory requirements in effect at the time of licensing of the majority of operating reactors did not require that all electric equipment and systems necessary to bring the reactor to cold shutdown be classified as safety related. However, electric equipment and systems necessary to shut down the reactor and maintain it in a safe shutdown condition are required to be classified as safety related and therefore are covered by the rule.

The Commission is currently studying the requirements for shutdown decay heat removal under Unresolved Safety Issue (USI) A–45. The overall purpose of A–45 is to evaluate the adequacy of current licensing requirements to ensure that failure to remove shutdown decay heat does not pose an unacceptable risk. Under A–45 a comprehensive and consistent set of shutdown cooling requirements for existing and future plants is being developed. The final technical resolution of A–45 is presently scheduled for October 1984.

The Commission believes it would be premature at this time to impose the requirement to environmentally qualify electric equipment and systems necessary to achieve and maintain cold shutdown prior to the final resolution of A–45. Therefore, this requirement is not included in the final rule.

(3) Scope—Equipment in a Mild Environment—Paragraph 50.49(b)

Issue: The rule makes no distinction between equipment located in a harsh or mild environment. The stresses for equipment in a mild environment are less severe than for those in a harsh environment.

Response: The final rule does not cover the electric equipment located in a mild environment. The Commission has concluded that the general quality and surveillance requirements applicable to electric equipment as a result of other Commission regulations, including 10 CFR Part 50, Appendix B (see for example, Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Revision 3) are sufficient to ensure adequate performance of electric equipment important to safety located in mild environments. Since it has been concluded that no further environmental qualification requirements are needed for such equipment provided they fully satisfy all other applicable regulations, the Commission has determined that no additional requirements are necessary with respect to electric equipment important to safety located in mild environments in order for licensees to satisfy, with respect to such equipment, existing license conditions or technical specifications calling for qualification of safety-related electric equipment in accordance with DOR Guidelines or NUREG–0588.

(4) Scope—Previous Qualification Efforts—Paragraph 50.49(b)

Issue: The rule does not recognize that plants have completed qualification of equipment to the DOR Guidelines or NUREG–0588. Without such recognition, industry efforts, manpower, and billions of dollars will go down the drain.

Response: The final rule has been expanded to alleviate this concern. See Paragraph 50.49(k).

(5) Humidity—Paragraph 50.49(e)(2)

Issue: The effects of time-dependent variations of relative humidity during normal operation cannot be considered for all equipment. There are no detailed standards for how this type of testing should be performed.

Response: The Commission agrees. Humidity variation during normal operation are difficult to predict. It has not been demonstrated that the time-dependent variation in humidity will produce any differences in degradation of electric equipment. The words "Time-dependent variation of relative" have been deleted from Paragraph 50.49(e)(2).

(6) Aging—Paragraph 50.49(e)(5)

Issue: The requirement that ongoing qualifications be done using "prototype equipment natually aged" is overly restrictive. Use of accelerated aging to define a qualified life is not technically feasible.

Response: Preconditioning by accelerated aging is technically feasible for simple electric equipment for plant life and for complex electric equipment for a shorter designated life. The Commission recognizes that state-of-art technology will be utilized in any aging program. Reference to qualified life has been deleted from paragraph 50.49(e)(5).

(7) Margins—Paragraph 50.49(e)(8)

Issue: The margins applied in addition to known conservatisms lead to excessive stress that could lead to failures of equipment in unrealistic qualification tests.

Response: The Commission agrees. This requirement could have caused excessive margins. The paragraph has been modified to recognize conservatisms that can be qualified.

(8) Analysis and partial test data—Paragraph 50.49(f)(4)

Issue: If partial type test data that adequately support the analytical assumptions and conclusions are available, their analysis should be allowed to extrapolate or interpolate these results for equipment, regardless of purchase date.

Response: The Commission agrees. Reference to "purchase date" has been deleted.

(9) Requirement for a central file—Paragraph 50.49(j)

Issue: The requirement for a central file should be deleted since it is not cost effective and has no safety benefit.

Response: The Commission agrees. This requirement has been subject to different interpretations. A record of qualification must be maintained in an "auditable form" but not necessarily in a central file for the entire period during which the covered item is installed in a nuclear power plant. Recordkeeping requirement of 10 CFR Part Appendix B must be met. Certain records can be kept at the vendor's shop.

(10) Justification of continued operation for operating plants.

Issue: The requirement to submit justification for the continued operation of operating plants should be deleted since this information has been previously submitted to NRC.

Response: This requirement has been satisfactorily met and Paragraph 50.49(j) of the proposed rule has been deleted in its entirety from the final rule.

In addition, Paragraph 50.49(g) of the proposed rule has been deleted from the final rule since it is too prescriptive. It will be included in Regulatory Guide 1.89.

Effective Date: This rule replaces the "interim rule" published in the Federal Register on June 30, 1982 (47 FR 28363). The "interim rule" suspended environmental qualification deadlines contained in license conditions or technical specifications of operating plants. On the effective date of this rule (see above), the "interim rule" is superseded and the schedule for environmental qualification contained in this rule takes effect for all plants.

Paperwork Reduction Act

The final rule contains information collection requirements that have been approved by the Office of Management and Budget; OMB approval number is 3150–0011.

Regulatory Flexibility Statement

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not have a significant

economic impact on a substantial number of small entities. This final rule affects the method of qualification of electric equipment by utilities. Utilities do not fall within the definition of a small business found in Section 3 of the Small Business Act, 15 U.S.C. 632.

In addition, utilities are required by the Commission's Memorandum and Order CLI–80–21, dated May 23, 1980, to meet the requirements contained in the DOR "Guidelines for Evaluating Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors," (November 1979) and NUREG–0588, "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment," which form the basis of this rule. Consequently, this rule codifies existing requirements and imposes no new costs or obligations on utilities.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of title 5 of the United States Code, 10 CFR Part 50 is amended.

48 FR 5532
Published 2/7/83
Effective 3/9/83

10 CFR Part 50

Codes and Standards for Nuclear Power Plants; Winter 1981 Addenda

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is amending its regulations to incorporate by reference the Winter 1981 Addenda of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. The sections of the ASME Code being incorporated provide rules for the construction of nuclear power plant components and specify requirements for inservice inspection of those components. Adoption of these amendments will permit the use of improved methods for construction and inservice inspection of nuclear power plants.

DATE: Effective March 9, 1983.

FOR FURTHER INFORMATION CONTACT: Mr. E. T. Baker, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 443–5892.

SUPPLEMENTARY INFORMATION: On July 29, 1982, the Nuclear Regulatory Commission published in the Federal Register (47 FR 32725) proposed amendments to its regulation, 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The proposed amendments revised § 50.55a to incorporate by reference the Winter 1981 Addenda to Section III, Division 1, "Rules for the Construction of Nuclear Power Plant Components," and Section XI, Division 1, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Boiler and Pressure Vessel Code.

Some of the changes effected in the addenda which are incorporated by this rule are:

1. Article NCA–9000, "Glossary," was added to Section III. This provides standard definitions for terms used in Section III.

2. Paragraph IWB–2413, "Inspection Program for Steam Generator Tubing," of Section XI was revised. The ASME Boiler and Pressure Vessel Code has deferred its requirements for the examination of steam generator tubing to the requirements contained in the NRC plant Technical Specifications.

3. Paragraph IWB–3112 of Section XI was revised to make the acceptance standards of Section III and the preservice acceptance standards of Section XI more compatible. Paragraph IWB–3112 permits flaws that are identified as construction flaws to be evaluated according to Articles NB–2500 and NB–5300, provided that the flaws were detected during the inspections conducted during construction and were recorded. If the preservice examination indicates the flaws exceed the requirements of Articles NB–2500, NB–5300, and Table IWB–3410–1, the component will be considered unacceptable for service.

4. Subsection IWE, "Requirements for Class MC Components of Light-Water Cooled Power Plants," was added to Section XI by these addenda. However, 10 CFR § 50.55a presently only incorporates those portions of Section XI that address the ISI requirements for Class 1, 2, and 3 components and their supports. The regulation does not currently address the ISI of containments. Since this amendment is only intended to update current regulatory requirements to include the latest Code addenda, the requirements of Subsection IWE are not imposed upon Commission licensees by this amendment. The applicability of Subsection IWE will be considered separately.

Interested persons were invited to submit written comments for consideration in connection with the proposed amendment by September 27, 1982. No comments were received. The Commission is adopting the proposed amendment with a minor editorial revision to accommodate the incorporation by reference of the ASME Code.

Paperwork Reduction Act Statement

Pursuant to the provisions of the Paperwork Reduction Act of 1980 (Pub. L. 96–511), the NRC has made a determination that this proposed rule does not impose new or impact existing information collection requirements.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121. Since these companies are dominant in their service areas, this rule does not fall within the purview of the Act.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter 1, Code of Federal Regulations, Part 50 are published as a document subject to codification.

48 FR 5886
Published 2/9/83
Effective 2/9/83

Correction published 2/28/83 48 FR 8256

10 CFR Parts 50 and 70

Regional Licensing Reviews

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The NRC is amending its regulations to require licensees to

submit reports of plan changes which do not decrease safeguards effectiveness to NRC regional offices. This action is being taken as part of the implementation of the NRC regional licensing program under which responsibility for certain categories of action has been delegated to Regional Administrators. The amendments are necessary to inform curent or prospective licensees of current NRC practice and organization.

EFFECTIVE DATE: February 9, 1983.

FOR FURTHER INFORMATION CONTACT: Martin Levy, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC, Telephone: (301) 427–4024.

SUPPLEMENTARY INFORMATION: The Nuclear Regulatory Commission is amending its regulations concerning the reviews of reactor security and contingency plan changes, transportation physical protection plan changes, and special nuclear material facility security, contingency and material control and accounting program changes where the plan or program changes do not decrease effectiveness. These amendments are being made to reflect current NRC practices and assigned responsibilities under the NRC regional licensing program. The revised provisions, 10 CFR 50.54(p), and 70.32 (c), (d), (e), and (g), specify that notification as to changes to certain security and contingency plans and material control and accounting programs in Regions I and II be sent to the cognizant regional office commencing February 9, 1983. As of October 1, 1983, notification as to changes in certain security and contingency plans and material control and accounting programs in all regions will be sent to the cognizant regional offices. With respect to the specific actions delegated to the Regional Administrators, the revisions to the regulations are intended to state exactly which functions are now assigned to the Regional Administrators as their total responsibility under the Commission's regionalization program and when these responsibilities will become effective.

The basic delegation of authority for the Regional Administrators is contained in NRC Manual Chapter 0128. The general delegation requires supplementation, however, as specific functions are transferred to the Regional Offices. The amendments contained herein meet the requirement for such supplementation.

The changes to 10 CFR 50.54(p) and 70.32 (c), (d), (e), and (g) are nonsubstantive amendments. They simply change the entity to which certain notices are sent and the dates that the change becomes effective.

Since the amendments relate to minor matters of agency organization and procedure, notice of proposed rulemaking and public procedure thereon are unnecessary under 5 U.S.C. 553. For the same reason good cause exists for making the amendments effective upon publication in the Federal Register without the customary thirty day notice.

Paperwork Reduction Act Statement

The information collection requirements contained in this regulation have been approved under OMB clearance numbers 3150-0011, 3150-0009.

List of Subjects

10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

10 CFR Part 70

Hazardous materials—Transportation, Nuclear materials, Packaging and containers, Penalty, Radiation protection, Reporting and recordkeeping requirements, Scientific equipment, Security measures, Special nuclear material.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 552 and 553, the following amendments to 10 CFR Parts 50 and 70, are published as a document subject to codification.

48 FR 8256
Published 2/28/83

10 CFR Parts 50 and 70

Regional Licensing Reviews

Correction

In FR Doc. 83–3326 beginning on page 5886 in the issue of Wednesday, February 9, 1983, make the following corrections.

On page 5887, first column, § 70.32 (c)(1), eighth line from the bottom, "discribed" should read "described"; second column, paragraph (d), sixth line, "§ 80.22(g)" should read "§ 70.22(g)"; third column, paragraph (g), eighth line, "licensees" should read "licensee"; and in the sixth line from the bottom, "70.30(g)" should read "73.30(g)"

≫48 FR 13966
Published 4/1/83.
Effective 6/1/83

10 CFR Part 50

Applicability of License; Conditions and Technical Specifications in an Emergency

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to clarify that all Part 50 licensees may take reasonable action that departs from a license condition or technical specification in an emergency when this action is immediately needed to protect the public health and safety. The rule is being issued because NRC regulations currently do not permit deviations from license conditions or technical specifications under any conditions. Emergency situations can arise, though, during which a license condition or a technical specification could prevent necessary protective action by the licensee. The rule allows this action to be taken in emergency circumstances.

EFFECTIVE DATE: June 1, 1983.

FOR FURTHER INFORMATION CONTACT: Charles M. Trammell III, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (Telephone: 301–492–7389).

SUPPLEMENTARY INFORMATION: The rule clarifies the regulations in 10 CFR Part 50 by providing that a licensee may take reasonable action that departs from a license condition or a technical specification in an emergency when such action is immediately needed to protect the public health and safety.

At present, NRC regulations do not permit deviations from license conditions or technical specifications under any circumstances. Emergencies can arise, though, during which compliance with a license condition or a technical specification could prevent necessary action by a licensee to protect the public health and safety. Licensees are understandably reluctant to take actions contrary to their licenses. Absolute compliance with the license in emergencies can be a barrier to effective protective action by a licensee.

Technical specifications contain a wide range of operating limitations and requirements concerning actions to be taken if certain systems fail and if certain parameters are exceeded. The bulk of technical specifications are devoted to keeping the plant parameters within safe bounds and keeping safety

equipment operable during normal operation. However, technical specifications also require the implementation of a wide range of operating procedures which go into great detail as to actions to be taken in the course of operation to maintain facility safety. These procedures are based on the various conditions—normal, transient and accident conditions—analyzed as part of the licensing process. Nevertheless, unanticipated circumstances can occur during the course of emergencies. These circumstances may call for responses different from any considered during the course of licensing—e.g., the need to isolate the accumulators to prevent nitrogen injection to the core while there was still substantial pressure in the primary system was unforeseen in the licensing process before TMI–2; thus, the technical specifications prohibited this action. Special circumstances requiring a deviation from license requirements are not necessarily limited to transients or accidents not analyzed in the licensing process. Special circumstances can arise during emergencies involving multiple equipment failure or coincident accidents where plant emergency procedures could be in conflict, or not applicable to the circumstances. In addition, an accident can take a course different from that visualized when the emergency procedure was written, thus requiring a protective response at variance with a procedure required to be followed by the licensee. Also, performance of routine surveillance testing, which might fall due during an emergency, could either divert the attention of the operating crew from the emergency or cause the loss of equipment needed for proper protective action.

Technical specifications or license conditions can be amended by NRC and the rule is not intended to apply in circumstances where time allows this process to be followed. The rule would apply only to those emergency situations where action by the licensee is required immediately to protect the public health and safety—action which may be contrary to a technical specification or a license condition.

It is the intent of the rule to allow deviations from license requirements only in the special circumstances described. It is not intended that licensees be allowed to deviate from procedures and other license requirements where these are applicable.

For these reasons, the Commission believes that there should be a specific provision in the Commission's rules clearly indicating that a licensee may take reasonable action that departs from a license condition or technical specification in an emergency when such action is immediately needed to protect the public health and safety.

The rule also requires a licensee, under § 50.72, to notify the NRC Operations Center by telephone of emergency circumstances requiring it to take any action that departs from a license condition or a technical specification. When time permits, the notification is made before the protective action is taken; otherwise, it is made as soon as possible thereafter. The impact of this reporting requirement on licensees is expected to be negligible.

The rule follows the recommendation in NUREG–0616, "Report of Special Review Group, Office of Inspection and Enforcement on Lesson Learned from Three Mile Island"[1] the NRC establish and announce a firm policy regarding the applicability of the license under emergency circumstances, with certain exceptions discussed below.

(a) The rule does not require that departure from a license condition or technical specification have the concurrence of the most senior licensee and NRC personnel available at the time before the departure.

While the Commission certainly does not disagree with the general concept that the most senior licensee personnel available at the time should be involved, the rule specifies that such action shall be approved by a licensed senior operator as a minimum and does not go into further detail as to which additional persons should be involved if time permits or which persons should be involved under other circumstances. The persons responsible for safe operation of the facility are already identified in the facility license and implementing procedures.

(b) The rule does not require the concurrence of NRC personnel. Receiving the "concurrence" or "approval" of NRC personnel would amount to a license amendment using procedures contrary to those existing for amendments. The rule specifically applies to emergency situations where immediate action is needed and time is not available for a license amendment. Requiring the concurrence of NRC personnel available at the time tends to shift the burden of safety from the licensee to NRC—contrary to the rule's intent. It could also shift the burden to NRC personnel on site who may be unqualified to concur in a proposed licensee action.

[1] NUREG–0616 is available for inspection and copying for a fee at NRC Public Document Room, 1717 H Street, NW., Washington, D.C. Copies may be purchased through the NRC/GPO Sales Program by using a GPO Deposit Account, MasterCard or Visa by calling the NRC/GPO Sales Office on (301) 492–9530 or by sending a check or money order payable to Superintendent of Documents to: Sales Manager 058, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Purchase orders are acceptable from Federal, state, and local government offices only.

The rule was published as a proposed rule in the Federal Register on August 18, 1982 (47 FR 35996). A sixty-day comment period expired on October 18, 1982.

A total of thirty-seven responses were received, representing thirty-nine organizations or persons. Respondees included: licensees of power reactors (24), individuals (5), research reactor licensees (2), nuclear steam system suppliers (2), professional organizations (2); and one response each from: a law firm, a State, a labor union, and an architectural-engineering firm. Copies of comments received by the Commission in response to the notice of proposed rulemaking may be examined in the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C. (file PR–50, 47 FR 35996).

The vast majority of the commenters (thirty-seven) were in favor of the rule. Many expressed enthusiastic support. Only two commenters believed that the rule should not be adopted. Eight commenters believed the rule should be issued as proposed. However, as a result of comments received by others, some changes have been made, as discussed below.

One commenter pointed out the similarity between the proposed rule and the so-called "General Prudential Rule" contained in both the International Regulations for Preventing Collisions at Sea, 1972, and the Inland Navigational Rules Act of 1980. The rule is identical in each and states:

> In construing and complying with these Rules due regard shall be had to all dangers of navigation and collision and to any special circumstances, including the limitations of the vessels involved, which may make a departure from those rules necessary to avoid immediate danger. (Rule 2(b)).

The commenter added that a Commanding Officer (of a naval ship) is permitted to deviate from written rules to the extent necessary to save his ship, and that there is ample precedent for the proposed NRC rule.

It is also very similar to a rule of the Federal Aviation Administration (FAA) governing the operation of aircraft, 14 CFR 91.3, which states that "[i]n an emergency requiring immediate action, the pilot in command may deviate from any rule * * * to the extent necessary to meet that emergency. Each pilot in command who deviates from a rule * * * shall, upon the request of the Administrator, send a written report of that deviation to the Administrator."

The Commission had both the General Prudential Rule and the FAA rule in mind when it framed the proposed NRC rule. Further, it is clear that Congress

believes that licensees have authority to take whatever action is necessary to respond t emergencies involving an imminent threat to public health and safety. H.R. Rep. No. 97–884, 97th Cong., 2d Sess. 38 (1982). The rule codifies and clarifies this authority.

In addition to seeking the usual public comment as to any aspects of the proposed rule, the Federal Register Notice of the proposed rule stated:

> The proposed rule does not provide significant guidance to Part 50 licensees for identifying those situations in which deviations from license conditions or technical specifications are allowable. In addition, the proposed rule and the supplementary information does not contain standards to be used by the NRC staff in determining whether to take enforcement action against Part 50 licensees who deviate from license conditions or technical specifications in these types of situations. The Commission particularly solicits comments on these two areas.

Thirty-four comments were received in response to this request, and most were strongly opposed to the Commission providing additional deviation guidance or enforcement standards.

As for deviation guidance, one comment, which was opposed to such, was typical: "[w]e do not believe that it is feasible to provide detailed guidance as to when deviations are permissible. The whole purpose of the proposed amendments is to provide flexibility in situations that cannot be anticipated. Any effort to provide more detailed standards is likely to defeat that purpose by unintentionally excluding a situation in which a deviation is necessary or appropriate."

The Commission agrees with this comment, and feels that any attempt to define in more detail the precise circumstances under which a deviation is permissible is bound to exclude a circumstance where deviation might be entirely appropriate. Whereas the conditions under which a deviation is allowed are not described at length, nevertheless, the deviation criteria are quite specific: the licensee must be faced with an emergency situation in which compliance with the license is posing a barrier to effective protective action and rapid protective action is needed.

Based on the foregoing and public comments received, no changes have been made to the rule with respect to the conditions under which the rule may be invoked.

In response to the Commission's request for comments on the need for enforcement standards, most commenters stated that the matter of enforcement should be based on the specific circumstances surrounding the event, and that enforcement standards would be difficult to frame for the unusual circumstances under which the rule might be used. One commenter pointed out that enforcement standards would tend to limit actions that could or could not be taken, and thereby serve to provide deviation guidance which most felt was inappropriate (discussed above).

The Commission has concluded that enforcement standards, as such, are not needed. The Commission agrees that providing such standards would tend to define the circumstances under which the rule could be used (deviation guidance). As discussed above, this has been judged to be undesirable.

The rule does, however, contain implicit enforcement guidance. The NRC would review a licensee's use of the rule to determine answers to the following types of questions.

a. Did the licensee have to act immediately to avert possible adverse consequences to the public health and safety?

b. Was adequate or equivalent protective action that is consistent with the license immediately apparent?

c. Was the action reasonable? Based on information available at the time did it serve to protect the public health and safety? Did the licensee deviate from its license only to the extent necessary to meet the emergency?

d. Was there time for an amendment of the license to be approved by NRC?

Answers to these questions should be adequate to determine if the rule had been violated. Specific enforcement action would have to depend on the specific circumstances.

Ten persons made comments to the effect that overly critical reviews or overzealous enforcement action following the use of the rule would cause licensees to hesitate to use the rule. The Commission agrees with these comments. The Commission recognizes that a licensee will need to exercise judgment in applying the rule, and in its after-the-fact review, it may not agree in every instance with the licensee's actions. However, enforcement action for a violation of the rule will not be taken unless a licensee's action was unreasonable considering all the relevant circumstances having to do with the emergency.

The Federal Register Notice for the proposed rule contained additional comments of Commissioner Gilinsky, in which he stated:

> I believe the decision to operate outside the Technical Specifications should be made by a senior reactor operator since I understand that reactor operators are not trained or tested on both the basis and importance of the Technical Specifications. I would be interested in receiving comments on this issue.

Nineteen comments were received in response to this request and most all agreed that such a decision should be made, as a minimum, by a licensed senior operator. Those opposed expressed the opinion that such concurrence should not be mandatory or that higher concurrances should be obtained if possible.

A minor clarifying change to the rule has been made in response to these comments and another which stated that the rule was confusing because the first paragraph of the proposed rule discussed *licensees* and the second discussed *operators*. The second paragraph now reads: "Licensee action permitted by paragraph (x) of this section shall be approved, as a minimum, by a licensed senior operator." This change makes it clear that if a licensee takes emergency action allowed by paragraph (x), such action must be approved by, at least, a licensed senior operator acting for the licensee. Under the provision, any licensed senior operator (licensed for the unit involved) would be sufficient. However, as one commenter pointed out, more senior licensee personnel would probably be available. If so, the decision to depart from the license in an emergency would pass to them (as higher authorities in the chain of command). If, however, an emergency requiring prompt action should occur on a back shift, no licensee representative higher in the chain of command is likely to be available. To require other approvals could serve to defeat the purpose of the rule.

One commenter stated that the rule should provide for deviations from the NRC regulations as well as license conditions and technical specifications. This was intended, and the language of numerous comments indicated that this was understood. Each license issued is subject to all applicable rules, regulations and orders of the Commission. This is stated in the license itself and also in 10 CFR 50.54(h) as a condition of the license. Therefore, the rule does apply to NRC rules, regulations and orders as well.

Three comments were received regarding the applicability of the rule in situations where damage to the facility or injury to personnel might be involved. For the reasons discussed above, the rule does not contain explicit deviation guidance or examples. Nevertheless, the threat of injury to personnel would be an appropriate example. As for invoking the rule to prevent damage to the facility

or machinery, it would depend on the specific circumstances of the emergency. The rule does not apply to machinery or the facility, *per se*, but would apply if such damage is tied to a possible adverse effect on public health and safety.

One commenter suggested that the Commission emphasize the permissive nature of the rule by explaining that its use is totally discretionary, that licensees need not invoke it even in an emergency, and that failure to invoke the rule would not constitute a violation of NRC requirements for which an enforcement action may be brought. This comment was not accepted. Whereas the language of the rule is permissive in nature, licensees are responsible for operating their facilities in such a manner as to protect the public health and safety. If, in an emergency, protective action is needed (and no action consistent with the license that can provide adequate or equivalent protection is immediately apparent) the licensee would be obliged to take the protective action that deviates from the license. Viewed in this sense, use of the rule is not optional.

One commenter suggested that the provisions of the rule be placed in the facility operating license indicating that Technical Specifications are not intended to prevent a licensee from undertaking, during the course of emergency conditions, any action necessary to protect public health and safety. No changes to the rule have been made in response to this comment. First, as stated above, the rule applies not only to technical specifications, but any NRC requirement, e.g., regulations, rules, license conditions, or technical specifications. Second, it is not necessary to place the statement into the operating license itself, since it is being published as a rule in § 50.54, "Conditions of licenses." By so doing, the rule applies to all operating licenses.

A commenter suggested that a policy statement to the same safe effect would be better than a rule. This was not accepted, since the Commission believes that it would be inappropriate to issue a policy statement in conflict with a rule.

Only two commenters were not in favor of the rule. One comment stated that the rule would be abused. The Commission disagrees with this comment, noting that several safeguards have been built into the rule to prevent this. First, licensees must notify the NRC by telephone when the rule is used. Second, the NRC may require written statements from a licensee concerning its actions after use of the rule. One commenter agreed that these provisions provided adequate safeguards against abuse.

Two commenters suggested that written notice to the Commission of use of the rule should be mandatory. It is highly likely that a written report would be required since most violations of the license or technical specifications do require a written report. To the extent that the Commission's information needs related to the event are not met, the Commission would require additional information, as provided for in the rule. A mandatory written report is therefore not deemed essential.

One commenter stated that the reporting requirement "When time permits, the notification (of the use of the rule) shall be made before the protective action is taken * * *" was inconsistent with the use of the term "immediately needed" language of the rule, and implied that a prior report should not be required at all. In response, the Commission notes that all power reactors have dedicated telephones connected directly to the NRC Operations Center at all times, and, under most circumstances under which the rule might need to be used, the licensee would be in contact with the NRC Operations Center anyway. Therefore, most emergency situations would allow time to make a prior notification to the NRC, considering the ease and speed that it could be done. Second, while the term "immediately" as used in the rule is not defined, it could involve a period of hours as the emergency develops, and certainly a period of time that is too short to permit NRC approval of a change to the license before the action must be taken (as stated earlier). Therefore, there is not necessarily an inconsistency between the prior report and the timing of the need for action. If, however, there is no time for a prior report, it is not required.

One commenter stated that the rule constituted an admission that NRC rules and licenses are not adequate; another stated that the rule shows that NRC rules have become unwieldy. The Commission does not agree with these comments, and believes the issuance of the rule will result in increased protection to the public health and safety. Any attempt to define NRC requirements to cover all conceivable circumstances, as discussed earlier, is bound to fail, and would result in unwieldly regulations.

One comment noted an apparent inconsistency between the rule (which admits that unanticipated circumstances can occur during the course of emergencies that may call for responses different from any considered during the course of licensing) and the admissibility of intervenor contentions that are denied litigation at a hearing on the basis that such senarios are incredible or so unlikely as to be barred from litigation.

The Commission, in issuing this rule, takes no position whatever as to the merit of any contention involving emergency circumstances that could be postulated at a nuclear facility. Rather, the rule assumes that special circumstances have occurred which makes use of the rule necessary to protect the public health and safety.

A commenter suggested that use of the rule be tied to the "general emergency" emergency classification, i.e., that the rule should apply only when a general emergency has been declared by the licensee. This comment was not accepted. Emergencies can develop rapidly. Use of the rule should not be encumbered by administrative prerequisites.

A commenter proposed that a large fee—up to one million dollars—be charged for use of the rule. The thrust of the comment was to ensure that violation of NRC requirements be carefully considered. Another suggested holding hearings after the emergency to determine justifications for use of the rule and to see if other actions could have been taken. As stated earlier, the Commission believes that the rule contains adequate safeguards. Therefore these comments were not adopted.

Finally, a commenter suggested that an evaluation be made of each instance in which a deviation was made to prevent possible future need for similar deviations. The Commission will review each use of the rule both to confirm that the intent of the rule was satisfied and also to analyze the circumstances leading to the emergency to see what permanent corrective action may be appropriate.

Regulatory Analysis

The Commission has prepared a regulatory analysis for this regulation. The analysis examines the costs and benefits of the rule as considered by the Commission. A copy of the regulatory analysis is available for inspection and copying for a fee at the NRC Public Document Room, 1717 H Street, NW., Washington, D.C. Single copies of the analysis may be obtained from Charles M. Trammell III, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C., 20555, Telephone (301) 492–7389.

Paperwork Reduction Act Statement

The information collection requirements contained in this regulation have been approved by the Office of Management and Budget; OMB approval No. 3150-0011.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that these regulations will not, if promulgated, have a significant economic impact on a substantial number of small entities. These regulations affect licensees that own and operate nuclear utilization facilities licensed under sections 103 and 104 of the Atomic Energy Act of 1954, as amended. The amendment serves to clarify the applicability of license conditions and technical specifications in an emergency. The clarification would be incorporated as a condition of the respective operating licenses, and would require no action on the part of licensees. Accordingly, there is no new, significant economic impact on these licensees; nor do these licensees fall within the definition of small businesses set forth in section 3 of the Small Business Act, 15 U.S.C. 632, or within the Small Business Size Standards set forth in 13 CFR Part 121.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, and Reporting and recordkeeping requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50 are published as a document subject to codification.

48 FR 14864
Published 4/6/83
Effective Date: 5/6/83.

The Commission specifically requests comments on this interim final rule by 5/6/83. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

10 CFR Part 50

Standards for Determining Whether License Amendments Involve No Significant Hazards Considerations

AGENCY: Nuclear Regulatory Commission.

ACTION: Interim final rule.

SUMMARY: Pursuant to Public Law 97-415, NCR is amending its regulations to specify standards for determining whether requested amendments to operating licenses for certain nuclear power reactors and testing facilities involve no significant hazards considerations. These standards will help NRC in its evaluations of these requests. Research reactors are not covered. However, the Commission is reviewing the extent to which and the way such standards should be applied to research reactors.

EFFECTIVE DATE: May 6, 1983. The Commission specifically requests comments on this interim final rule by May 6, 1983. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Written comments should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Copies of the documents discussed in this notice and of the comments received on the proposed rule and interim final rules may be examined in the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Thomas F. Dorian, Esq., Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: (301) 492-8690.

SUPPLEMENTARY INFORMATION:

Introduction

Pursuant to Public Law 97-415, NRC must promulgate, within 90 days of enactment, regulations which establish (a) standards for determining whether an amendment to an operating license involves no significant hazards considerations, (b) criteria for providing or, in emergency situations, for dispensing with prior notice and reasonable opportunity for public comment on any such determination, and (c) procedures for consultation on any such determination with the State in which the facility involved is located.

Proposed regulations to specify standards for determining whether amendments to operating licenses or construction permits for facilities licensed under §§ 50.21(b) or 50.22 (including testing facilities) involve no significant hazards considerations (item (a) above) were published for comment in the **Federal Register** by the Commission on March 28, 1980 (45 FR 20491). Since the Commission rarely issues amendments to construction permits and has never issued a construction permit amendment involving a significant hazards consideration, it has decided not to apply these standards to amendments to construction permits and to handle these case-by-case. This is in keeping with the legislation which applies only to operating license amendments. Additionally, these standards will not now be applied to research reactors. The Commission is currently reviewing whether and how it should apply these or similar standards to research reactors. In sum, the interim final rule will amend Part 50 of the Commission's regulations to establish standards for determining whether an amendment to an operating license involves no significant hazards consideration.

The rule takes account not only of the new legislation but also the public comments received on the proposed rule. For the sake of clarity, affected prior legislation as well as the Commission's regulations and practice are discussed as background information.

Simultaneously with the promulgation of these standards in § 50.92, the Commission is publishing an interim final rule which contains criteria for providing or, in emergency situations, for dispensing with prior notice and reasonable opportunity for and public comment on a determination about whether an amendment to an operating license involves a significant hazards consideration (item (b) above). This rule also specifies procedures for consultation on any such a determination with the State in which the facility involved is located (item (c) above). The rule appears separately in the **Federal Register.**

These regulations are issued as final, though in interim form, and comments will be considered on them. They will become effective 30 days after publication in the **Federal Register.** Accordingly, interested persons who wish to comment are encouraged to do so at the earliest possible time, but not later than 30 days after publication, to permit the fullest consideration of their views.

Background

A. Affected Legislation, Regulations and Procedures

When the Atomic Energy Act of 1954 (Act) was adopted in 1954, it contained no provision which required a public

hearing on issuance of a construction permit or operating license for a nuclear power reactor in the absence of a request from an interested person. In 1957, the Act was amended to require that mandatory hearings be held before issuance of both a construction permit and an operating license for power reactors and certain other facilities. Public Law 85-256 (71 Stat. 576) amending § 189a. of the Act.

The 1957 amendments to the Act were interpreted by the Commission as requiring a "mandatory hearing" before issuance of amendments to construction permits and operating licenses. *See, e.g.*, Hearing Before the Subcommittee on Legislation, Joint Committee on Atomic Energy, 87th Cong., 2d. Sess. (April 17, 1962), at 6. Partially in response to the administrative rigidity and cumbersome procedures which this interpretation forced upon the Commission (*see*, Joint Committee on Atomic Energy Staff Study, "Improving the AEC Regulatory Process", March 1961, at 49-50), section 189a. of the Act was amended in 1962 to eliminate the requirement for a mandatory public hearing except upon the application for a construction permit for a power or testing facility. As stated in the report of the Joint Committee on Atomic Energy which recommended the amendments:

> Accordingly, this section will eliminate the requirements for a mandatory hearing, except upon the application for a construction permit for a power or testing facility. Under this plan, the issuance of amendments to such construction permits, and the issuance of operating licenses and amendments to such construction permits, and the issuance of operating licenses and amendments to operating licenses, would be only after a 30-day public notice and an offer of hearing. In the absence of a request for a hearing, issuance of an amendment to a construction permit, or issuance of an operating license, or an amendment to an operating license, would be possible without formal proceedings, but on the public record. It will also be possible for the Commission to dispense with the 30-day notice requirement where the application presents no significant hazards consideration. This criterion is presently being applied by the Commission under the terms of AEC Regulations 50.59. H. Rep. No. 1966, 87th Cong., 2d. Sess., at 8.

Thus, according to the 1962 amendments, a mandatory public hearing would no longer be required before issuance of an amendment to a construction permit or operating license and a thirty-day prior public notice would be required only if the proposed amendment involved a "significant hazards consideration." In sum, section 189a. of the Act, now provides that, upon thirty-days' notice published in the **Federal Register**, the Commission may issue an operating license, or an amendment to an operating license, or an amendment to a construction permit, for a facility licensed under sections 103 or 104b. of the Act, or for a testing facility licensed under section 104c., without a public hearing if no hearing is requested by any interested person. Section 189a. also permits the Commission to dispense with such thirty-days' notice and **Federal Register** publication with respect to the issuance of an amendment to a construction permit or an amendment to an operating license upon a determination by the Commission that the amendment involves no significant hazards consideration. These provisions have been incorporated into §§ 2.105, 2.106, 50.58(a) and (b) and 50.91 of the Commission's regulations.

The regulations provide for prior notice of a "proposed action" on an application for an amendment when a determination is made that there is a significant hazards consideration and provide an opportunity for interested members of the public to request a hearing. *See* §§ 2.105(a)(3) and 50.91. Hence, if a requested license amendment is found to involve a significant hazards consideration, the amendment would not be issued until after any required hearing is completed or after expiration of the notice period. In addition, § 50.58(b) further explains the Commission's hearing and notice procedures, as follows:

> The Commission will hold a hearing after at least 30 days notice and publication once in the **Federal Register** on each application for a construction permit for a production or utilization facility which is of a type described in § 50.21(b) or § 50.22 or which is a testing facility. When a construction permit has been issued for such a facility following the holding of a public hearing and an application is made for an operating license or for an amendment to a construction permit or operating license, the Commission may hold a hearing after at least 30 days notice and publication once in the **Federal Register** or, in the absence of a request therefor by any person whose interest may be affected, may issue an operating license or an amendment to a construction permit or operating license without a hearing, upon 30 days notice and publication once in the **Federal Register** of its intent to do so. If the Commission finds that no significant hazards consideration is presented by an application for an amendment to a construction permit or operating license, it may dispense with such notice and publication and may issue the amendment.

Thus, it is very important to note that a determination that a proposed license amendment does or does not present a "significant hazards consideration" has involved the hearing and attendant notice requirements. Consequently, under its present rules the Commission has generally coupled its determination about whether it should provide a hearing before issuing an amendment with its determination about whether it should issue a prior notice, and the central factor in both determinations has been the determination about "no significant hazards consideration." It has been charged that in practice this has meant that the staff has sometimes coupled the decision about the merits of an amendment to the decision about when it should notice the amendment, *i.e.*, whether it should give prior notice or post notice. Additionally, there has been some concern that the Act and the regulations have not defined the term "significant hazards consideration" and that they have not established criteria for determining when a proposed amendment involves a "significant hazards consideration." Section 50.59 does set forth criteria for determining when a proposed change, test or experiment involves an "unreviewed safety question," but it is clear that not every such question involves a "significant hazards consideration." In any event, the Commission's practice with regard to license amendments involving no significant hazards consideration (unless, as a matter of discretion, prior notice was given) was to issue the amendment and then publish in the **Federal Register** a notice of issuance. *See* § 2.106. In such a case, interested members of the public who wished to object to the amendment and request a hearing could do so, but a request for a hearing did not, by itself, suspend the effectiveness of the amendment. Thus, both the notice and hearing, if one were requested, have occurred after the amendment was issued.

It is very important to bear in mind that there is not intrinsic safety significance to the "no significant hazards consideration" standard. Whether or not an action requires prior notice, no license and no amendment may be issued unless the Commission concludes that it provides reasonable assurance that the public health and safety will not be endangered and that the action will not be inimical to the common defense and security or to the health and safety of the public. *See, e.g.*, § 50.57(a). Also, whether or not an amendment entails prior notice, no amendment to any license may be issued unless it conforms to all applicable Commission safety standards. Thus, the "no significant hazard consideration" standard has been a procedural standard only, governing whether public notice of a proposed action must be provided, before the action is taken by the Commission. In short, the "no significant hazards consideration" standards has been a notice standard and has had no substantive safety significance, other than that attributable to the process of prior notice to the public and reasonable opportunity for a hearing.

B. The Sholly Decision and the New Legislation

The Commission's practice of not providing an opportunity for a prior hearing on a license amendment not involving significant hazards considerations was held to be improper in *Sholly* v. *NRC*, 651 F.2d 780 (1980), rehearing denied, 792 F.2d 792 (1980), *cert granted* 101 S. Ct. 3004 (1981) (*Sholly*). In that case the U.S. Court of Appeals for the District of Columbia Circuit ruled that, under section 189a of the Act, NRC must hold a prior hearing before an amendment to an operating license for a nuclear power plant can become effective, if there has been a request for hearing (or an expression of interest in the subject matter of the proposed amendment which is sufficient to constitute a request for a hearing). A prior hearing, said the Court, is required even when NRC has made a finding that a proposed amendment involves no significant hazards consideration and has determined to dispense with prior notice in the Federal Register. At the request of the Commission and the Department of Justice, the Supreme Court agreed to review the Court of Appeals' interpretation of section 189a of the Act. The Supreme Court has remanded the case to the Court of Appeals with instructions to vacate it if it is moot and, if it is not, to reconsider its decision in light of the new legislation.

The Court of Appeals' decision did not involve and has no effect upon the Commission's authority to order immediately effective amendments, without prior notice or hearing, when the public health, safety, or interest so requires. *See*, Administrative Procedure Act, Section 9(b), 5, U.S.C. § 558(c), section 161 of the Atomic Energy Act, and 10 CFR 2.202(f) and 2.204. Similarly, the Court did not alter existing law with regard to the Commisssion's pleading requirements, which are designed to enable the Commission to determine whether a person requesting a hearing is, in fact, an "interested person" within the meaning of section 189a.—that is, whether the person has demonstrated standing and identified one or more issues to be litigated. *See, BPI* v. *Atomic Energy Commission*, 502 F.2d 424, 428 (D.C. Cir. 1974), where the Court stated that, "Under its procedural regulations it is not unreasonable for the Commission to require that the prospective intervenor first specify the basis for this request for a hearing."

However, the Commission believed that legislation was needed to change the result reached by the Court in *Sholly* because of the implications of the requirement that the Commission grant a requested hearing before it could issue a license amendment involving no significant hazards consideration. The commission believes that, since most requested license amendments involving no significant hazard consideration are routine in nature, prior hearing on such amendments could result in unwarranted disruption or delay in the operations of nuclear plants and could impose regulatory burdens upon it and the nuclear industry that are not related to significant safety matters. Subsequently, on March 11, 1981, the Commission submitted proposed legislation to Congress (introduced as S. 912) that would expressly authorize it to issue a license amendment before holding a hearing requested by an interested person, when it has made a determination that no significant hazards consideration is involved in the amendment.

After the House and Senate conferees considered two similar bills, H.R. 2330 and S. 1207, they agreed on a unified version (*See* Conf. Rep. No. 97–884, 97th Cong. 2d. Sess. (1982)) and passed Public Law 97–415. Specifically section 12(a) of that law amends section 189a of the Act by adding the following with respect to license amendments involving no significant hazard consideration:

(2)(A) The Commission may issue and make immediately effective any amendment to an operating license, upon a determination by the Commission that such amendment involves no significant hazards consideration, notwithstanding the pendency before the Commission of a request for a hearing from any person. Such amendment may be issued and made immediately effective in advance of the holding and completion of any required hearing. In determining under this section whether such amendment involves no significant hazards consideration, the Commission shall consult with the State in which the facility involved is located. In all other respects such amendment shall meet the requirements of this Act.

(B) The amendment shall periodically (but not less frequently than once every thirty days) publish notice of any amendments issued, or proposed to be issued, as provided in subparagraph (A). Each such notice shall include all amendments issued, or proposed to be issued, since the date of publication of the last such periodic notice. Such notice shall, with respect to each amendment or proposed amendment (i) identify the facility involved; and (ii) provide a brief description of such amendment. Nothing in this subsection shall be construed to delay effective date of any amendment.

(C) The Commission shall, during the ninety-day period following the effective date of this paragraph, promulgate regulations establishing (i) standards for determining whether any amendment to an operating license involves no significant hazards consideration; (ii) criteria for providing or, in emergency situations, dispensing with prior notice and reasonable opportunity for public comment on any such determination, which criteria shall take into account the exigency of the need for the amendment involved; and (iii) procedures for consultation on any such determination with the State in which the facility involved is located."

Section 12(b) of that law specifies that:

(b) The authority of the Nuclear Regulatory Commission, under the provisions of the amendment made by subsection (a), to issue and to make immediately effective any amendment to an operating license shall take effect upon the promulgation by the Commission of the regulations required in such provisions.

Thus, as noted above, the legislation authorizes NRC to issue and make immediately effective an amendment to an operating license upon a determination that the amendment involves no significant hazards consideration, even though NRC has before it a request for a hearing from an interested person. At the same time, however, the legislative history makes it clear that Congress expects NRC to exercise its authority only in the case of amendments not involving significant safety questions. The Conference Report states:

The conference agreement maintains the requirement of the current section 189a. of the Atomic Energy Act that a hearing on the license amendment be held upon the request of any person whose interest may be affected. The agreement simply authorizes the Commission, in those cases where the amendment involved poses no significant hazards consideration, to issue the license amendment and allow it to take effect before this hearing is held or completed. The conferees intend that the Commission will use this authority carefully, applying it only to those license amendments which pose no significant hazards consideration. *Id.*, at 37.

In this regard, the Senate stressed:

Its strong desire to preserve for the public a meaningful right to participate in decisions regarding the commercial use of nuclear power. Thus, the provision does not dispense with the requirement for a hearing, and the NRC, if requested [by an interested person], must conduct a hearing after the license amendment takes effect. S. Rep. No. 97–113, 97th Cong., 1st Sess. at 14 (1981).

It should be also noted, in light of the previous discussion about the coupling of the decision on the merits of an amendment with the decision about when to notice the amendment, that Section 12 of Public Law 97–415, by providing for prior public notice and comment, in effect uncouples the determination about prior versus post notice from the determination about whether to issue an amendment.

In sum, the Commission is promulgating as an interim final rule the proposed standards in § 50.92 for determining whether an amendment to an operating license involves no significant hazards consideration, and it is publishing separately an interim final rule to establish (a) procedures for noticing operating license amendment requests for an opportunity for a hearing, (b) criteria for providing or, in emergency situations, dispensing with prior notice and reasonable opportunity for public comment on any proposed

determination on no significant hazards consideration, and (c) procedures for consulting with the requisite State on any such determination.

Interim Final Rule on Standards for Determining Whether an Amendment to an Operating License Involves No Significant Hazards Considerations and Examples of Amendments That Are Considered Likely or Not Likely To Involve Significant Hazards Considerations

A. Petition and Proposed Rule

The Commission's interim final rule on standards for determining whether an amendment involves no significant hazards consideration completes its actions on the notice of proposed rulemaking (discussed above), which was issued in response to a petition for rulemaking (PRM 50–17) submitted by letter to the Secretary of the Commission on May 7, 1976, Mr. Robert Lowenstein. For the reasons discussed below, the petition is denied. However, the Commission is promulgating standards, as intended by the petitioner, though not the standards petitioned for. (PRM–50–17 was published for comment in the Federal Register on June 14, 1976 (41 FR 24006)). The staff's recommendations on this petition are in SECY–79–660 (December 13, 1979). The notice of proposed rulemaking was published in the Federal Register on March 28, 1980 (45 FR 20491). The staff's recommendations on the interim final rule are in SECY–81–366, 81–366A, 83–16, 83–16A and 83–16B. (These documents are available for examination in the Commission's Public Document Room at 1717 H Street, N.W. Washington, D.C.)

The petitioner requested that 10 CFR Part 50 of the Commission's regulations be amended with respect to the procedures for issuance of amendments to operating licenses for production and utilization facilities. The petitioner's proposed amendments to the regulations would have required that the staff take into consideration (in determining whether a proposed amendment to an operating license involves no significant hazards consideration) whether operation of the plant under the proposed license amendment would (1) substantially increase the consequences of a major credible reactor accident or (2) decrease the margins of safety substantially below those previously evaluated for the plant and below those approved for existing licenses. Further, the petitioner proposed that, if the staff reaches a negative conclusion about both of these standards, the proposed amendment must be considered not to involve a significant hazards consideration.

In issuing the proposed rule, the Commission sought to improve the licensing process by specifying in the regulations standards on the meaning of no significant hazards consideration. These standards would have applied to amendments to operating licenses, as requested by the petition for rulemaking, and also to construction permits, to whatever extent considered appropriate. As mentioned before, the Commission now believes that these standards should not be applied to amendments to construction permits, not only because construction permits do not normally involve a significant hazards consideration but also because such amendments are very rare; the proposed rule has been modified accordingly. Additionally, the Commission is reviewing the extent to which and the way standards should be applied to research reactors. The Commission will handle case-by-case any amendments requested for construction permits or for research reactors with respect to the issue of significant hazards considerations.

In the statement of considerations which accompanied the proposed rule, the Commission explained that it did not agree with the petitioner's proposed standards because of the limitation to "major credible reactor accidents" and the failure to include accidents of a type different from those previously evaluated.

During the past several years the Commission's staff has been guided, in reaching its determinations with respect to no significant hazards consideration, by standards very similar to those now described in this interim final rule as well as by examples of amendments likely to involve, and not likely to involve, significant hazards considerations. These have proven useful to the staff, and the Commission employed them in developing the proposed rule. The notice of proposed rulemaking contained standards proposed by the Commission to be incorporated into Part 50, and the statement of considerations contained examples of amendments to an operating license that are considered likely and not likely to involve a significant hazards consideration. The examples were samples of precedents with which the staff was familiar; they were representative of certain kinds of circumstances; however, they did not cover the entire range of possibilities; nor did they cover every facet of a particular situation. Therefore, they had to be used together with standards in determining whether or not a proposed amendment involved significant hazards considerations.

The three standards proposed in the notice of proposed rulemaking were whether the license amendment would: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the possibility of an accident of a type different from any evaluated previously, or (3) involve a significant reduction in a margin of safety.

Before responding to the specific comments on the proposed rule, it should be noted again that it was structured so that the three standards would have been used to decide not only whether the Commission would publish prior notice of an amendment request (as opposed to notice after the amendment was issued) but also to decide whether to grant an opportunity for hearing before issuance of the amendment (as opposed to granting the opportunity after issuance). As explained before, the standards were not meant to be used to make the ultimate decision about whether to issue an amendment—that final decision is a public health and safety judgment on the merits, not to be confused with the decisions on notice and reasonable opportunity for a hearing.

As a result of the legislation, under the final rule the three standards would no longer be used to make a determination about whether or not to issue prior notice of an amendment request. As fully described in the separate Federal Register notice mentioned before, the Commission has formulated separate notice and State consultation procedures that will provide in all (except emergency and some exigent) situations prior notice of amendment requests. The standards and the examples will usually be limited to a proposed determination and, when a hearing request is received, to a final determination about whether or not significant hazards considerations are involved in connection with an amendment and, therefore, whether or not to offer an opportunity for a hearing before an amendment is issued. The decision about whether or not to issue an amendment is meant to remain one that, as a separate matter, is based on public health and safety.

B. Comments on the Proposed Rule

1. *General.* Nine persons submitted comments on the petition for rulemaking and nine persons submitted comments on the proposed amendments. The comments on the petition are in SECY–79–660. The comments on the proposed rule are in SECY file PR–2, 50 (45 FR 20491). A summary of the comments and initially-proposed responses to the comments are in SECY–81–366, available for examination at the Commission's Public Document Room. In light of the legislation, the Commission has decided to make its approach more precise (as described

below) and has, therefore, revised its response to the comments. The new response is found in SECY–83–16A and 83–16B.

One of the commenters stated that all three standards are unclear and useless in that they imply a level of detailed review of amendment applications far beyond what the staff normally performs. It is the Commission's considered judgment that the standards have been and will continue to be useful in making the necessary reviews. Moreover, the Commission believes that the standards when used together with the examples will enable it to make the requisite decisions. In this regard, it should be noted that Congress was more than aware of the Commission's standards and proposed their expeditious promulgation. For example, Senate Report No. 97–113, cited above, stated:

> • • • The Committee notes that the Commission has already issued for public comment rules including standards for determining whether an amendment involves no significant hazards consideration. The Committee believes that the Commission should be able to build upon this past effort, and it expects the Commission to act expeditiously in promulgating the required standards within the time specified in section 301 [i.e., within 90 days after enactment]. *Id.* at 15.

Similarly, the House noted:

> The committee amendment provides the Commission with the authority to issue and make immediate effective amendments to licenses prior to the conduct or completion of any hearing required by section 189(a) when it determines that the amendment involves no significant hazards consideration. However, the authority of the Commission to do so is discretionary, and does not negate the requirement imposed by the Sholly decision that such a hearing, upon request, be subsequently held. *Moreover, the Committee's action is in light of the fact that the Commission has already issued for public comment rules including standards for determining whether an amendment involves no significant hazards considerations. The Commission also has a long line of case-by-case precedents under which it has established criteria for such determinations.* • • • H. Rep No. 97–22 (Part 2), 97th Cong., 1st Sess., at 26 (1981) (Emphasis added).

A number of commenters recommended, in regard to the second criterion in the proposed rule, that a threshold level for accident consequences (for example, the limits in 10 CFR Part 100) be established to eliminate insignificant types of accidents from being given prior notice. This comment was not accepted. Setting a threshold level for accident consequences could eliminate a group of amendments with respect to accidents which have not been previously evaluated or which, if previously evaluated, may turn out after further evaluation to have more severe consequences than previously evaluated.

It is possible, for example, that there may be a class of license amendments sought by a licensee which, while designed to improve or increase safety may, on balance, involve a significant hazards consideration because they result in operation of a reactor with a reduced safety margin due to other factors or problems (*i.e.*, the net effect is a reduction in safety of some significance). Such amendments typically are also proposed by a licensee as an interim or final resolution of some significant safety issue that was not raised or resolved before issuance of the operating license—and, based on an evaluation of the new safety issue, they may result in a reduction of a safety margin believed to have been present when the liscense was issued. In this instance, the presence of the new safety issue in the review of the proposed amendment, at least arguably, could prevent a finding of no significant hazards consideration, even though the issue would ultimately be satisfactorily resolved by the issuance of the amendment. Accordingly, the Commission added to the list of examples considered likely to involve a significant hazards consideration a new example (vii).

When the legislation described before was being considered, the Senate Committee on Environment and Public Works commented upon the Commission's proposed rule before it reported S. 1207. It stated:

> The Committee recognizes that reasonable persons may differ on whether a license amendment involves a significant hazards consideration. Therefore, the Committee expects the Commission to develop and promulgate standards that, to the maximum extent practicable, draw a clear distinction between license amendments that involve a significant hazards consideration and those that involve no significant hazards consideration. The Committee anticipates, for example, that consistent with prior practice, the Commission's standards would not permit a "no significant hazards consideration" determination for license amendments to permit reracking of spent fuel pools. *Id.*, at 15.

The Commission agrees with the committee "that reasonable persons may differ on whether a license amendment involves a significant hazards consideration" and it has tried "to develop and promulgate standards that, to the maximum extent practicable, draw a clear distinction between license amendments that involve a significant hazards consideration and those that involve no significant hazards consideration." The Commission believes that the standards coupled with the examples help draw as clear a distinction as practicable. It has decided not to include the examples in the text of the rule in addition to the original standards, but, rather, to keep them as guidelines under the standards for the use of the Office of Nuclear Reactor Regulation.

The Commission wishes licensees to note that when they consider license amendments outside the examples, the Commission may need additional time for its determination on no significant hazards considerations; thus, they should factor this information into their schedules for developing and implementing such changes to facility design and operation.

The interim final rule thus goes a long way toward meeting the intent of the legislation. In this regard, the Conference Report stated:

> The conferees also expect the Commission, in promugating the regulations required by the new subsection (2)(C)(i) of section 189a. of the Atomic Energy Act, to establish standards that to the extent practicable draw a clear distinction between license amendments that involve a significant hazards consideration and those amendments that involve no such consideration. These standards should not require the NRC staff to prejudge the merits of the issues raised by a proposed license amendment. Rather, they should only require the staff to identify those issues and determine whether they involve significant health, safety or environmental consideration. These standards should be capable of being applied with ease and certainty, and should ensure that the NRC staff does not resolve doubtful or borderline cases with a finding of no significant hazards consideration. Conf. Rep. No. 97–884, 97th Cong., 2d Sess., at 37 (1982).

It should be noted that the Commission has attempted to draft standards that are as useful and as clear as possible, and it has tried to formulate examples that will help in the application of the standards. These final standards are the product of a long deliberative process. As will be recalled, standards were submitted by a petition for rulemaking in 1976 for the Commission's consideration. The standards and examples are as clear and certain as the Commission can make them—and, to repeat the Conference Report, "should ensure that the NRC staff does not resolve doubtful or borderline cases with a finding of no significant hazards consideration." The Commission welcomes suggestions from the public to make them clearer and more precise, recognizing, in the Senate Committee's words, "that reasonable persons may differ on whether a license amendment involves a significant hazards consideration."

With respect to the Conference Committee's statement, quoted above,

that the "standards should not require the NRC staff to prejudge the merits of the issues raised by a proposed license amendment," as will be recalled, it has been the Commission's general practice to couple the determination about prior versus post notice with the determination about provision of a prior hearing versus a hearing after issuance of the amendment; thus, occasionally, the issue of prior versus post notice was seen by some as including a judgment on the merits of issuance of an amendment. Consequently one commenter suggested that application of the criteria with respect to prior notice in many instances will necessarily require the resolution of substantial factual questions which largely overlap the issues which bear on the merits of the license amendment. The implication of the comment was that the Commission at the prior notice stage could lock itself into a decision on the merits. Conversely, the commenter stated that the staff, in using the no significant hazards consideration standards, was reluctant to give prior notice of amendments because its determination about the notice might be viewed as constituting a negative connotation on the merits.

In any event, the legislation has made these comments moot by requiring separation of the criteria used for providing or dispensing with public notice and comment on no significant hazards consideration determinations from the standards used to make a determination about no significant hazards consideration. Under the legislation, the Commission's criteria for public notice and comment would not be the same as its standards on the determination about no significant hazards consideration. In fact, the Commission will normally provide prior notice (for public comment and for an opportunity for a hearing) for each operating license amendment request. (The Commission's criteria on public notice and comment are discussed in the separate Federal Register notice noted before.) Additionally, the Commission believes that use of these standards and examples will help it reach sound decisions about the issues of significant versus no significant hazard considerations and that their use would not prejudge the merits of a decision.

It holds this belief because the standards and the examples are merely screening devices for a decision about whether to hold a hearing before as opposed to after an amendment is issued and cannot be said to prejudge the Commission's final decision to issue or deny the amendment request. As explained above, that decision is a separate one, based on separate public health and safety findings.

2. *Reracking of Spent Fuel Pools.* The Commission has been providing prior notice and opportunity for prior hearing on requests for amendments involving reracking of spent fuel pools. The Commission is not prepared to say that a reracking of a spent fuel storage pool will necessarily involve a significant hazards consideration. Nevertheless, as shown by the legislative history of Public Law 97–415, section 12(a), the Congress was aware of the Commission's practice and statements were made by members of both Houses, before passage of that law, that these members thought the practice would be continued. The report on the Senate side has been quoted above; the discussion in the House is found at 127 *Cong. Record* at H 8156, Nov. 5, 1981.

The Commission is not including reracking in the list of examples that will be considered likely to involve a significant hazard consideration, because a significant hazards consideration finding is a technical matter which has been assigned to the Commission. However, in view of the expressions of Congressional understanding, the Commission feels that the matter deserves further study. Accordingly, the staff has been directed to prepare by August 1, 1983, a report (1) which reviews NRC experience to date with respect to spent fuel pool expansion reviews, and (2) which provides a technical judgment on the basis which a spent fuel pool expansion amendment may or may not pose a significant hazards consideration. Upon receipt and review of this report the Commission will revisit this part of the rule.

During the interim, the Commission will make a finding on the question of no significant hazards consideration for each reracking application, on a case-by-case basis, giving full consideration to the technical circumstances of the case, using the standards in § 50.92 of the rule. It is not the intent of the Commission to make a no significant hazards consideration finding for reracking based on unproven technology. However, where reracking technology has been well developed and demonstrated and where the Commission determines on a technical basis that reracking involves no significant hazards, the Commission should not be precluded from making such a finding. If the Commission determines that a particular reracking involves significant hazards considerations, it will provide an opportunity for a prior hearing, as explained in the separate Federal Register notice.

Additionally, it should be noted that under section 134 of the Nuclear Waste Policy Act of 1982, an interested party may request a "hybrid" hearing in connection with reracking, and may participate in such a hearing, if one is held. The Commission will publish in the near future a Federal Register notice describing this type of hearing with respect to expansions of spent fuel storage capacity and other matters concerning spent fuel.

3. *Amendments Involving Irreversible Consequences*

The Conference Report stated:

> The conferees intend that in determining whether a proposed license amendment involves no significant hazards consideration, the Commission should be especially sensitive to the issue posed by license amendments that have irreversible consequences (*such as those permitting an increase in the amount of effluents or radiation emitted from a facility or allowing a facility to operate for a period of time without full safety protections).* In those cases, issuing the order in advance of a hearing would, as a practical matter, foreclose the public's right to have its views considered. In addition, the licensing board would often be unable to order any substantial relief as a result of an after-the-fact hearing. Accordingly, the conferees intend the Commission be sensitive to those license amendments which involve such irreversible consequences. (Emphasis added.) *Id.*, at 37–38.

This statement was explained in a colloquy between Senators Simpson and Domenici, as follows:

> Mr. Domenici. In the statement of managers, I direct attention to a paragraph in section 12, the so-called Sholly provision, wherein it is stated that in applying the authority which that provision grants the NRC "should be especially sensitive to the issue posed by license amendments that have irreversible consequences." Is that paragraph in general, or specifically, the words "irreversible consequences" intended to impose restrictions on the Commission's use of that authority beyond the provisions of the statutory language? Can the Senator clarify that, please?
>
> Mr. Simpson. I shall. It is not the intention of the managers that the paragraph in general, nor the words "irreversible consequences," provide any restriction on the Commission's use of that authority beyond the statutory provision in section 189a. Under that provision, the only determination which the Commission must make is that its action does not involve a significant hazard. In that context, "irreversibility" is only one of the many considerations which we would expect the Commission to consider. It is the determination of hazard which is important, not whether the action is irreversible. Clearly, there are many irreversible actions which would not pose a hazard. Thus where the Commission determines that no significant hazard is involved, no further consideration need be given to the irreversibility of that action.
>
> Mr. Domenici. I thank the Senator for the clarification. That is consistent with my readings of the language . . . 134 *Cong. Rec.* (Part II) at S. 13056 (daily ed. Oct. 1, 1982).

The statement was further explained in a colloquy between Senators Mitchell and Hart, as follows:

Mr. Mitchell. The portion of the statement of managers discussing section 12 of the report, the so-called Sholly provision, stresses that in determining whether a proposed amendment to a facility operating license involves no significant hazards consideration, the Commission "should be especially sensitive . . . to license amendments that have irreversible consequences." Is my understanding correct that the statement means the Commission should take special care in evaluating, for possible hazardous considerations, amendments that involve irreversible consequences?

Mr. Hart. The Senator's understanding is correct. As you know, this provision seeks to overrule the holding of the U.S. Court of Appeals for the District of Columbia in Sholly against Nuclear Regulatory Commission. That case involved the venting of radioactive krypton gas from the damaged Three Mile Island Unit 2 reactor—an irreversible action.

As in this case, once the Commission has approved a license amendment, and it has gone into effect, it could prove impossible to correct any oversights of fact or errors of judgment. Therefore, the Commission has an obligation, when assessing the health or safety implications of an amendment having irreversible consequences, to insure that only those amendments that clearly raise no significant hazards issues will take effect prior to a public hearing. *Id.* (Part III), at S. 13292.

In light of the Conference Report and colloquies quoted above, the Commission wishes to note that it will make sure "that only those amendments that clearly raise no significant hazards issues will take effect prior to a public hearing." It will do this by providing in § 50.92 of the rule that it will review proposed amendments with a view as to whether they involve irreversible consequences. In this regard, example (iii) makes clear that an amendment which allows a plant to operate at full power during which one or more safety systems are not operable would be treated in the same way as other examples considered likely to involve a significant hazards consideration in that it is likely to meet the criteria in § 50.92 of the rule.

Finally, it is once again important to note that the examples do not cover all possible examples and may not be representative of all possible concerns. As new information is developed, the Commission will refine these examples and add new examples, in keeping with the standards in § 50.92 of the interim final rule—and, if necessary, it will tighten the standards themselves.

The Commission has left the proposed rule intact to the extent that the rule states standards with respect to the meaning of "no significant hazards consideration." The standards in the interim final rule are substantially identical to those in the proposed rule, though the attendant language in new § 50.92 as well as in § 50.58 has been revised to make the determination easier to use and understand. To supplement the standards that are being incorporated into the Commission's regulations, the guidance embodied in the examples will be referenced in the procedures of the Office of Nuclear Reactor Regulation, a copy of which will be placed in the Commission's Public Document Room.

Examples of Amendments That Are Considered Likely To Involve Significant Hazards Considerations Are Listed Below

Unless the specific circumstances of a license amendment request, when measured against the standards in § 50.92, lead to a contrary conclusion, then, pursuant to the procedures in § 50.91, a proposed amendment to an operating license for a facility licensed under § 50.21(b) or § 50.22 or for a testing facility will likely be found to involve significant hazards considerations, if operation of the facility in accordance with the proposed amendment involves one or more of the following:

(i) A significant relaxation of the criteria used to establish safety limits.

(ii) A significant relaxation of the bases for limiting safety system settings or limiting conditions for operation.

(iii) A significant relaxation in limiting conditions for operation not accompanied by compensatory changes, conditions, or actions that maintain a commensurate level of safety (such as allowing a plant to operate at full power during a period in which one or more safety systems are not operable).

(iv) Renewal of an operating license.

(v) For a nuclear power plant, an increase in authorized maximum core power level.

(vi) A change to technical specifications or other NRC approval involving a significant unreviewed safety question.

(vii) A change in plant operation designed to improve safety but which, due to other factors, in fact allows plant operation with safety margins significantly reduced from those believed to have been present when the license was issued.

Examples of Amendments That Are Considered Not Likely To Involve Significant Hazards Considerations Are Listed Below

Unless the specific circumstances of a license amendment request, when measured against the standards in § 50.92, lead to a contrary conclusion then, pursuant to the procedures in § 50.91, a proposed amendment to an operating license for a facility licensed under § 50.21(b) or § 50.22 or for a testing facility will likely be found to involve no significant hazards considerations, if operation of the facility in accordance with the proposed amendment involves only one or more of the following:

(i) A purely administrative change to technical specifications: for example, a change to achieve consistency throughout the technical specifications, correction of an error, or a change in nomenclature.

(ii) A change that constitutes an additional limitation, restriction, or control not presently included in the technical specifications: for example, a more stringent surveillance requirement.

(iii) For a nuclear power reactor, a change resulting from a nuclear reactor core reloading, if no fuel assemblies significantly different from those found previously acceptable to the NRC for a previous core at the facility in question are involved. This assumes that no significant changes are made to the acceptance criteria for the technical specifications, that the analytical methods used to demonstrate conformance with the technical specifications and regulations are not significantly changed, and that NRC has previously found such methods acceptable.

(iv) A relief granted upon demonstration of acceptable operation from an operating restriction that was imposed because acceptable operation was not yet demonstrated. This assumes that the operating restriction and the criteria to be applied to a request for relief have been established in a prior review and that it is justified in a satisfactory way that the criteria have been met.

(v) Upon satisfactory completion of construction in connection with an operating facility, a relief granted from an operating restriction that was imposed because the construction was not yet completed satisfactorily. This is intended to involve only restrictions where it is justified that construction has been completed satisfactorily.

(vi) A change which either may result in some increase to the probability or consequences of a previously-analyzed accident or may reduce in some way a safety margin, but where the results of the change are clearly within all acceptable criteria with respect to the system or component specified in the Standard Review Plan: for example, a change resulting from the application of a small refinement of a previously used calculational model or design method.

(vii) A change to make a license conform to changes in the regulations, where the license change results in very minor changes to facility operations clearly in keeping with the regulations.

(viii) A change to a license to reflect a minor adjustment in ownership shares among co-owners already shown in the license.

Paperwork Reduction Act Statement

This final rule contains no new or amended requirements for record keeping, reporting, plans or procedures, applications or any other type of information collection.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule does not have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants and testing facilities. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121. Since these companies are dominant in their service areas, this rule does not fall within the purview of the Act.

Regulatory Analysis

The Commission has prepared a regulatory analysis on these amendments, assessing the costs and benefits and resource impacts. It may be examined at the address indicated above.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and Sections 552 and 553 of Title 5 of the United States Code, notice is hereby given that the following amendments to Title 10, Chapter I, Code of Federal Regulations, 10 CFR Part 50, are published as a document subject to codification.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting requirements.

The views of Chairman Palladino and Commissioners Ahearne, Gilinsky and Asselstine follow.

Dated at Washington, D.C. this 4th day of April, 1983.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary for the Commission.

Chairman Palladino's Additional Views

In my opinion the Commission's decision on reracking represents its best technical judgment at this time on the generic no-significant-hazards question. That is, the Commission cannot say that reracking, as a general matter, would or would not involve a significant hazards consideration. The technical considerations of reracking proposals can vary significantly from one to another.

It was this latter fact, as well as the statements made in the Congress on reracking, that caused me to vote for the staff to study the technical basis for judgments about the hazards considerations presented by particular reracking applications.

I also believe that we may have cleared up one of the Congressional concerns about reracking by stating that it is not our intent to make a no-significant-hazards-consideration finding for reracking based on unproven technology.

Additional Comments of Commissioner Ahearne

There have been several complaints that the criteria for determining when an amendment involves significant hazards considerations are unclear or difficult to apply. For example, in the current notice the Commission notes that a commenter on the proposed rule stated the standards are "unclear and useless in that they imply a level of detailed review of amendment applications far beyond what the staff normally performs."[1] However, these criticisms must be considered in context.

In May 1976 a petition for rulemaking was filed which requested that criteria be specified for determining when an amendment involved no significant hazards considerations.[2] The petition was published for comment in 1976.[3] The Commission received few comments, primarily supporting or opposing criteria which had been proposed in the petition. The discussion focused on underlying philosophical/legal issues rather than specific alternative criteria.

The rulemaking then lay dormant for several years. In late 1979 the Commission addressed the matter and agreed to issue a proposed rule for public comment. The proposed rule was published March 1980.[4] As the Commission explained in that notice:

> During the past several years, the Staff has been guided in reaching its findings with respect to "no significant hazards consideration" by staff criteria and examples of amendments likely to involve, and not likely to involve, significant hazards considerations. These criteria and examples have been promulgated within the Staff and have proven useful to the Staff. The Commission believes it would be useful to consider incorporating these criteria into the Commission's regulations for use in determining whether a proposed amendment to an operating license or to a construction permit of any production or utilization facility involves no significant hazards consideration.[5]

With respect to the criticism that the criteria are unclear, we have not received much assistance in developing clearer criteria despite having obtained two rounds of comment over the last seven years. For example, in the comments on the proposed rule mentioned above, NRDC and UCS simply argued: "The NRC should promulgate a rule holding that prior notice and opportunity for hearing should be provided for construction permit and operating licenses amendments in all cases except those involving no significant previously-unreviewed safety issue."[6] In addition, the debate has often become confused by differing assumptions and philosophies that are not usually clearly identified. For example, the NRDC/UCS implication of a detailed level of review arises largely because of an implicit assumption that the criteria are intended to require a merits type review. In fact, what the staff has always done, and what I believe we had in mind, was to make a preliminary judgment.

Basically, we have done the best we can. I would be willing to address any specific alternatives. However, after dealing with this for a number of years, I believe we must move ahead with what we have.

Commissioner Gilinsky's Separate Views on the Interim Final Rule Regarding Standards for Determining Whether License Amendments Involve no Significant Hazards Considerations (Amendments to 10 CFR Part 50)

April 4, 1983.

Standing by themselves, the standards which are set forth in the rule are so general that they offer no real guidance to the NRC staff. In a prior version of the rule, the Commission included, in the rule itself, some very useful examples of which amendments do and do not involve a significant hazards consideration. In the final version, these examples have been downgraded to the preamble of the rule where they will be of little or no legal consequence and where, as a practical matter, they will be inaccessible to anyone but the NRC historian. This diminishes the value of the rule so much that I can no longer approve it.

The earlier version of the rule placed amendments authorizing substantial spent fuel pool expansions in the significant hazards consideration category. The Commission should have retained this categorization which is consistent with the terms of the rule. Moreover, the Commission should not have ignored the strong public and Congressional views which have been expressed on this point, most recently by

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[1] This refers to: "Comments by the Natural Resources Defense Council and the Union of Concerned Scientists on Proposed amendments to 10 CFR Parts 2 and 50: No Significant Hazards Consideration" at 8 (May 23, 1980) (comment 3, PR-2,50 [45 FR 20491]).

[2] The petition was filed May 7, 1976 by Mr. Robert Lowenstein on behalf of Boston Edison Company, Florida Power and Light Company, and Iowa Power Company.

[3] 41 FR 24008 (June 14, 1976).

[4] 45 FR 20491 (March 28, 1980).

[5] *Id.* at 20492.

[6] *Id.* At 11. 10 CFR 50.59 deems actions to be an "unreviewed safety question":

"(i) if the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the safety analysis report may be increased; or (ii) if a possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report may be created; or (iii) if the margin of safety as defined in the basis for any technical specification is reduced."

NRDC/UCS did not propose an alternate definition to be used with their proposal. It is interesting to note the substantial similarity to the significant hazards consideration test.

Senators Simpson, Hart, and Mitchell. I am in agreement with Commissioner Asselstine's analysis of the legislative record underlying this provision.

Additional Views of Commissioner Asselstine

I strongly disagree with the Commission majority's decision to permit the use of the "Sholly amendment" authority contained in section 12 of Public Law 97–415, the NRC Authorization Act for fiscal years 1982 and 1983, for license amendments for the reracking of a spent fuel pool.

The Commission majority's interim final rule would change the Commission's longstanding and consistent policy of requiring that any requested hearing on a license amendment for the reracking of a spent fuel pool be completed prior to granting the license amendment. Although the Commission has considered and approved a large number of spent fuel pool reracking amendments in the past, it has never used the no significant hazards consideration provisions in section 189 a. of the Atomic Energy Act of 1954 as a basis for approving the amendment before the completion of a requested hearing.

It is clear to me from the legislative history of section 12 of Public Law 97–415 that the Congress did not intend that the authority granted by section 12 should be used to approve reracking amendments prior to the completion of any requested hearing. The Sholly amendment was first included in the NRC authorization bill for fiscal years 1982 and 1983 by the Senate Committee on Environment and Public Works. The report of that Committee on the bill (Senate Report 97–113) makes it abundantly clear that the Committee did not intend the Sholly amendment to be used by the Commission to approve reracking amendments in advance of the completion of a requested hearing. Although the report of the Conference Committee on the bill did not repeat this admonition, there is no evidence to indicate a contrary view by the House-Senate conferees on the bill or by the two House Committees that considered the legislation.

Moreover, I believe that the use of the Sholly amendment authority to approve reracking amendments before the completion of any required hearing goes far beyond the justification offered by the Commission when it requested the Sholly amendment. In requesting the enactment of the Sholly amendment, the Commission described in some detail the situations in which it foresaw the need for this authority. The Commission emphasized the need for a large number of unforeseen and unanticipated changes to the detailed technical specifications in the operating licenses for nuclear powerplants that arise each year through such activities as refueling of the plant. The Commission argued that the need to hold a hearing on each of these changes, if one is requested, would be burdensome to the Commission and could disrupt the operation of a number of plants. In order to avoid this problem, the Commission asked the Congress to reinstate the authority that the Commission had exercised in similar situations since 1962. A reracking amendment is substantially different from the situations described by the Commission in requesting the Sholly amendment, because the need for reracking can be anticipated, because reracking involves a substantial physical modification to the plant and because of the significance attached to reracking by State and local officials and by the public.

Finally, I believe that there are strong public policy reasons for continuing the Commissions past practice of completing hearings on reracking amendment proposals before approving the amendment. These public policy reasons include the strong interest and concern on the part of State and local governments and the public regarding reracking proposals and the extent to which proceeding with reracking in advance of the hearing may prejudice the later consideration of other alternatives to the proposed reracking plan.

For these reasons, as a matter of policy, I would not permit the use of the Sholly amendment authority to approve reracking amendments prior to the completion of any requested hearing. I would therefore have added a provision to the Commission's interim final rule that would have required, as a policy matter, the completion of any requested hearing on a spent fuel pool reracking amendment before Commission approval of the amendment.

48 FR 14873
Published 4/6/83
Effective date: 5/6/83.

The Commission invites comments on this interim final rule by 5/6/83. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

10 CFR Parts 2 and 50

Notice and State Consultation

AGENCY: Nuclear Regulatory Commission.

ACTION: Interim final rule.

SUMMARY: Pursuant to Public Law 97–415, NRC is amending its regulations (1) to provide procedures under which normally it would give prior notice of opportunity for a hearing on applications it receives to amend operating licenses for nuclear power reactors and testing facilities (research reactors are not covered) and prior notice and reasonable opportunity for public comment on proposed determinations about whether these amendments involve no significant hazards considerations, (2) to specify criteria for dispensing with such prior notice and reasonable opportunity for public comment in emergency situations, and (3) to furnish procedures for consultation on any such determinations with the State in which the facility involved is located. These procedures will normally provide the public and the States with prior notice of NRC's determinations involving no significant hazards considerations and with an opportunity to comment on its actions.

DATE: Effective date: May 6, 1983. The Commission invites comments on this interim final rule by May 6, 1983. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Written comments should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Copies of comments received on the amendments as well as on the Regulatory Analysis proposed in connection with the amendments may be examined in the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Thomas F. Dorian, Esq., Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: (301) 492–8690.

SUPPLEMENTARY INFORMATION:

Introduction

Public Law 97–415, signed on January 4, 1983, among other things, directs NRC to promulgate regulations which establish (a) standards for determining whether an amendment to an operating license involves no significant hazards consideration, (b) criteria for providing or, in emergency situations, dispensing with prior notice and public comment on any such determination, and (c) procedures for consulting on such a determination with the State in which the facility involved is located. *See* Conf. Rep. No. 97–884, 97th Cong., 2d Sess. (1982). The legislation also authorizes NRC to issue and make immediately effective an amendment to a license, upon a determination that the amendment involves no significant hazards consideration (even though NRC has before it a request for a hearing by an interested person) and in advance of the holding and completion of any required hearing. This rulemaking and request for comments responds to the statutory directive that NRC expeditiously promulgate regulations on items (b) and (c) above. NRC is also publishing separately in the **Federal Register** interim final regulations on item (a) above.

These regulations are issued, as final though in interim form, and comments will be considered on them. They will become effective 30 days after publication in the Federal Register. Accordingly, interested persons who wish to comment are encouraged to do so at the earliest possible time, but not later than 30 days after publication, to permit the fullest consideration of their views.

Background

A. *Affected Legislation, Regulations and Procedures*

When the Atomic Energy Act of 1954 (Act) was adopted in 1954, it contained no provision which required a public hearing on issuance of a construction permit or operating license for a nuclear power reactor in the absence of a request from an interested person. In 1957, the Act was amended to require that mandatory hearings be held before issuance of both a construction permit and an operating license for power reactors and certain other facilities. Public Law 85–256 (71 Stat. 576) amending section 189a. of the Act.

The 1957 amendments to the Act were interpreted by the Commission as requiring a "mandatory hearing" before issuance of amendments to construction permits and operating licenses. *See, e.g.,* Hearing Before the Subcommittee on Legislation, Joint Committee on Atomic Energy, 87th Cong., 2d. Sess. (April 17, 1962), at 6.) Partially in response to the administrative rigidity and cumbersome procedures which this interpretation forced upon the Commission (*see,* Joint Committee on Atomic Energy Staff Study, "Improving the AEC Regulatory Process", March 1961, pp. 49–50), section 189a. of the Act was amended in 1962 to eliminate the requirement for a mandatory public hearing except upon the application for a construction permit for a power or testing facility. As stated in the report of the Joint Committee on Atomic Energy which recommended the amendments:

> Accordingly, this section will eliminate the requirements for a mandatory hearing, except upon the application for a construction permit for a power or testing facility. Under this plan, the issuance of amendments to such construction permits, and the issuance of operating licenses and amendments to such construction permits, and the issuance of operating licenses and amendments to operating licenses, would be only after a 30-day public notice and an offer of hearing. In the absence of a request for a hearing, issuance of an amendment to a construction permit, or issuance of an operating license, or an amendment to an operating license, would be possible without formal proceedings, but on the public record. It will also be possible for the Commission to dispense with the 30-day notice requirement where the application presents no significant hazards consideration. This criterion is presently being applied by the Commission under the terms of AEC Regulations 50.59. House Report No. 1966, 87th Cong., 2d. Sess., p. 8.

Thus, according to the 1962 amendments, a mandatory public hearing would no longer be required before issuance of an amendment to a construction permit or operating license and a thirty-day prior public notice would be required only if the proposed amendment involved a "significant hazards consideration." In sum, section 189a. of the Act, now provides that, upon thirty-days' notice published in the Federal Register, the Commission may issue an operating license, or an amendment to an operating license, or an amendment to a construction permit, for a facility licensed under sections 103 or 104b. of the Act, or for a testing facility licensed under section 104c., without a public hearing if no hearing is requested by any interested person. Section 189a. also permits the Commission to dispense with such thirty-days' notice and Federal Register publication with respect to the issuance of an amendment to a construction permit or an amendment to an operating license upon a determination by the Commission that the amendment involves no significant hazards consideration. These provisions have been incorporated into §§ 2.105, 2.106, 50.58(a) and (b) and 50.91 of the Commission's regulations.

The regulations provide for prior notice of a "proposed action" on an application for an amendment when a determination is made that there is a significant hazards consideration and provide an opportunity for interested members of the public to request a hearing. *See* §§ 2.105(a)(3) and 50.91. Hence, if a requested license amendment is found to involve a significant hazards consideration, the amendment would not be issued until after any required hearing is completed or after expiration of the notice period. In addition § 50.58(b) further explains the Commission's hearing and notice procedures, as follows:

> The Commission will hold a hearing after at least 30 days notice and publication once in the Federal Register on each application for a construction permit for a production or utilization facility which is of a type described in § 50.21(b) or § 50.22 or which is a testing facility. When a construction permit has been issued for such a facility following the holding of a public hearing and an application is made for an operating license or for an amendment to a construction permit or operating license, the Commission may hold a hearing after at least 30 days notice and publication once in the Federal Register or, in the absence of a request therefor by any person whose interest may be affected, may issue an operating license or an amendment to a construction permit or operating license without a hearing, upon 30 days notice and publication once in the Federal Register of its intent to do so. If the Commission finds that no significant hazards consideration is presented by an application for an amendment to a construction permit or operating license, it may dispense with such notice and publication and may issue the amendment.

The Commission's practice with regard to license amendments involving no significant hazards consideration (unless, as a matter of discretion, prior notice was given) was to issue the amendment and then publish in the Federal Register a "notice of issuance." *See* § 2.106. In such a case, interested members of the public who wished to object to the amendment and request a hearing could do so, but a request for a hearing did not, by itself, suspend the effectiveness of the amendment. Thus, both the notice and hearing, if one were requested, occurred after the amendment was issued.

It is important to bear in mind that there is no intrinsic safety significance to the "no significant hazards consideration" standard. Whether or not an action requires prior notice, no license and no amendment may be issued unless the Commission concludes that it provides reasonable assurance that the public health and safety will not be endangered and that the action will not be inimical to the common defense and security or to the health and safety of the public. *See, e.g.,* § 50.57(a). Also, whether or not an amendment entails prior notice, no amendment to any license may be issued unless it conforms to all applicable Commission safety standards. Thus, the "no significant hazards consideration" standard has been a procedural standard only, governing whether public notice of a proposed action must be provided, before the action is taken by the Commission. In short, the "no significant hazards consideration" standard has been a notice standard and has had no substantive safety significance, other than that attributable to the process of prior notice to the public to the public and reasonable opportunity for a hearing.

B. *The Sholly Decision and the New Legislation*

The Commission's practice of not providing an opportunity for a prior hearing on a license amendment not involving significant hazards considerations was held to be improper in *Sholly* v. *NRC*, 6512 F.2d 780 (1980), rehearing denied, 651 F.2d 792 (1980), *cert. granted* 101 S.Ct. 3004 (1981) (*Sholly*). In that case the U.S. Court of

Appeals for the District of Columbia Circuit ruled that, under section 189a. of the Act, NRC must hold a prior hearing before an amendment to an operating license for a nuclear power plant can become effective, if there has been a request for hearing (or an expression of interest in the subject matter of the proposed amendment which is sufficient to constitute a request for a hearing). A prior hearing, said the Court, is required even when NRC has made a finding that a proposed amendment involves no significant hazards consideration and has determined to dispense with prior notice in the Federal Register. At the request of the Commission and the Department of Justice, the Supreme Court agreed to review the Court of Appeals' interpretation of section 189a. of the Act. The Supreme Court has remanded the case to the Court of Appeals with instructions to vacate it if it is moot and, if it is not, to reconsider it in light of the new legislation.

The Court of Appeals' decision did not involve and has no effect upon the Commision's authority to order immediately effective amendments, without prior notice or hearing, when the public health, safety, or interest so requires. *See,* Administrative Procedure Act, section 9(b), 5 U.S.C. 556(c), section 161 of the Atomic Energy Act, and 10 CFR 2.202(f) and 2.204. Similarly, the Court did not alter existing law with regard to the Commission's pleading requirings, which are designed to enable the Commission to determine whether a person requesting a hearing is, in fact, an "interested person" within the meaning of section 189a.—that is, whether the person has demonstrated standing and identified one or more issues to be litigated. *See, BPI* v. *Atomic Energy Commission,* 502 F.2d 424, 423 (D.C. Cir. 1974), where the Court stated that, "Under its procedural regulations it is not unreasonable for the Commission to require that the prospective intervenor first specify the basis for his request for a hearing."

However, the Commission believed that legislation was needed to change the result reached by the Court in *Sholly* because of the implications of the requirement that the Commission grant a requested hearing before it could issue a license amendment involving no significant hazards consideration. The Commission believes that, since most requested license amendments involving no significant hazards consideration are routine in nature, hearings on such amendments could result in disruption or delay in the operations of nuclear powerplants and could impose regulatory burdens upon it and the nuclear industry that are not related to significant safety matters. Subsequently, on March 11, 1981, the Commission submitted proposed legislation to Congress (introduced as S. 912) that would expressly authorize it to issue a license amendment before holding a hearing requested by an interested person, when it has made a determination that no significant hazards consideration is involved in the amendment.

After the House and Senate conferees considered two similar bills, H.R. 2330 and S. 1207, they agreed on a unified version (*see* Conf. Rep. No. 97–884, 97th Cong. 2d. Sess. (1982)) and passed Pub. L. 97–414. Specifically, section 12(a) of that law amends section 189a. of the Act by adding the following with respect to license amendments involving no significant hazards considerations:

(2)(A) The Commission may issue and make immediately effective any amendment to an operating license, upon a determination by the Commission that such amendment involves no significant hazards consideration, notwithstanding the pendency before the Commission of a request for a hearing from any person. Such amendment may be issued and made immediately effective in advance of the holding and completion of any required hearing. In determining under this section whether such amendment involves no significant hazards consideration, the Commission shall consult with the State in which the facility involved is located. In all other respects such amendment shall meet the requirements of this Act.

(B) The Commission shall periodically (but not less frequently than once every thirty days) publish notice of any amendments issued, or proposed to be issued, as provided in subparagraph (A). Each such notice shall include all amendments issued, or proposed to be issued, since the date of publication of the last such periodic notice. Such notice shall, with respect to each amendment or proposed amendment (i) identify the facility involved; and (ii) provide a brief description of such amendment. Nothing in this subsection shall be construed to delay the effective date of any amendment.

(C) The Commission shall, during the ninety-day period following the effective date of this paragraph, promulgate regulations establishing (i) standards for determining whether any amendment to an operating license involves no significant hazards consideration; (ii) criteria for providing or, in emergency situations, dispensing with prior notice and reasonable opportunity for public comment on any such determination, which criteria shall take into account the exigency of the need for the amendment involved; and (iii) procedures for consultation on any such determination with the State in which the facility involved is located.

Section 12(b) of that law specifies that:

(b) The authority of the Nuclear Regulatory Commission, under the provisions of the amendment made by subsection (a), to issue and to make immediately effective any amendment to an operating license shall take effect upon the promulgation by the Commission of the regulations required in such provisions.

Thus, as noted above, the legislation authorizes NRC to issue and make immediately effective an amendment to an operating license upon a determination that the amendment involves no significant hazards consideration, even though NRC has before it a request for a hearing from an interested person. At the same time, however, the legislative history makes it clear that Congress expects NRC to exercise its authority only in the case of amendments not involving significant safety questions. The Conference Report states:

The conference agreement maintains the requirement of the current section 189a. of the Atomic Energy Act that a hearing on the license amendment be held upon the request of any person whose interest may be affected. The agreement simply authorizes the Commission, in those cases where the amendment involved poses no significant hazards consideration, to issue the license amendment and allow it to take effect before this hearing is held or completed. The conferees intend that the Commission will use this authority carefully, applying it only to those license amendments which pose no significant hazards consideration. *Id.,* at 37.

In this regard, the Senate stressed:

Its strong desire to preserve for the public a meaningful right to participate in decisions regarding the commercial use of nuclear power. Thus, the provision does not dispense with the requirement for a hearing, and the NRC, if requested [by an interested person], must conduct a hearing after the license amendment takes effect. *See* S. Rep. No. 97–113, 97th Cong., 1st Sess., at 14 (1981).

The public notice provision was explained by the Conference Report as follows:

The conferees note that the purpose of requiring prior notice and an opportunity for public comment before a license amendment may take effect, as provided in subsection (2)(C)(ii) for all but emergency situations, is to allow at least a minimum level of citizen input into the threshold question of whether the proposed license amendment involves significant health or safety issues. While this subsection of the conference agreement preserves for the Commission substantial flexibility to tailor the notice and comment procedures to the exigency of the need for the license amendment, the conferees expect the content, placement and timing of the notice to be reasonably calculated to allow residents of the area surrounding the facility an adequate opportunity to formulate and submit reasoned comments.

The requirement in subsection 2(C)(ii) that the Commission promulgate criteria for providing or dispensing with prior notice and

public comment on a proposed determination that a license amendment involves no significant hazards consideration reflects the conferees' intent that, wherever practicable, the Commission should publish prior notice of, and provide for prior public comment on, such a proposed determination.

In the context of subsection (2)(C)(ii), the conferees understand the term "emergency situations" to encompass only those rare cases in which immediate action is necessary to prevent the shutdown or derating of an operating commercial reactor . . . The Commission's regulations should insure that the "Emergency situations" exception under section 12 of the conference agreement will not apply if the licensee has failed to apply for the license amendment in a timely fashion. In other words, the licensee should not be able to take advantage of the emergency itself. To prevent abuses of this provision, the conferees expect the Commission to independently assess the licensee's reasons for failure to file an application sufficiently in advance of the threatened closure or derating of the facility. Conf. Rep. No. 97-884, 97th Cong., 2d Sess., at 38 (1982).

C. *Notice for Public Comment and for Opportunity for a Hearing.*

The Commission has decided to adopt the notice procedures and criteria contemplated by the legislation with respect to determinations about no significant hazards consideration. In addition it has decided to combine the notices for public comment on no significant hazards considerations with the notices for opportunity for a hearing, thereby, normally providing both prior notice of opportunity for a hearing and prior notice for public comment of requests it receives to amend operating licenses of facilities described in § 50.21(b) or § 50.22 or of testing facilities.

With respect to opportunity for a hearing, the Commission would amend § 2.105 to specify that it could normally issue in the **Federal Register** at least monthly a list of "notice of proposed actions" on requests for amendments to operating licenses. These monthly notices would provide an opportunity to request a hearing within thirty days. The Commission would also retain the option of issuing individual notices, as it sees fit. If the Commission does not receive any request for a hearing on an amendment within the notice period, it would take the proposed action when it has completed its review and made the necessary findings. If it receives such a request, it would act under a new § 50.91, which describes the procedures and criteria the Commission would use to act on applications for amendments to operating licenses involving no significant hazards considerations. (The interim final rule on "Standards for Determining Whether License Amendments Involve No Significant Hazards Considerations," published separately in the **Federal Register**, redesignated the present § 50.91 as § 50.92.)

To implement the main theme of the legislation, under new § 50.91 the Commission would combine a notice of opportunity for a hearing with a notice for public comment on any proposed determination on no significant hazards consideration. Additionally, new § 50.91 would permit the Commission to make an amendment immediately effective in advance of the holding and completion of any required hearing where it has determined that no significant hazards consideration is involved. Thus, § 50.91 would build upon amended § 2.105, providing details for the system of **Federal Register** notices. For instance, exceptions would be made for emergency situations, where no prior notices (for opportunity for a hearing and for public comment) might be issued, assuming no significant hazards considerations are involved. In sum, this system would add a "notice for public comment" under § 50.91 to the present system of "notice of proposed action" under § 2.105 and "notice of issuance" under § 2.106. Under this new system, the Commission would require an applicant requesting an amendment to its operating license (1) to provide its appraisal on the issue of significant hazards, using the standards in § 50.92 and the examples discussed in the separate **Federal Register** notice, and (2), if it involves the emergency or exigency provisions, to address the features on which the Commission must make its findings. (Both points will be discussed later.)

When the Commission receives the amendment request, as described below, it would first decide whether there is an emergency or an exigency. If there is no emergency, it would then make a preliminary decision, called a "proposed determination," about whether the amendment involves no significant hazards consideration—normally, this would be done before completion of the safety analysis (also called safety evaluation). In this determination, it might accept the applicant's appraisal in whole or in part or it might reject the applicant's appraisal but, nonetheless, reach the same conclusion.

At this stage, if the Commission decides that no significant hazards consideration is involved, it could issue an individual **Federal Register** notice or list this amendment in its monthly publication in the **Federal Register**. This monthly publication would not only list amendment requests received for which the Commission is publishing notice under § 2.105, it would also provide a reasonable opportunity for public comment by listing this and all amendment requests received since the last such monthly notice, and, like an individual notice, (a) providing a brief description of the amendment and of the facility involved, (b) noting the proposed no significant hazards consideration determination, (c) soliciting public comment on the determination, and (d) providing for a 30-day comment period.

While it is awaiting public comment, the Commission would proceed with the safety analysis. In this context, the Commission wishes to note that, though the substance of the public comments could be litigated in a hearing, when one is held, neither it nor its Boards will entertain hearing requests on its actions with respect to these comments. It believes that this is in keeping with the legislation which states that public comment cannot delay the effective date of an amendment.

After the public comment period, the Commission would review the comments, consider the safety analysis, and reach its final decision on the amendment request. If it decides that no significant hazards consideration is involved, it would publish an individual "notice of issuance" under § 2.106 or publish the notice of issuance in its system of monthly **Federal Register** notices, and thus close the public record. Note that the Commission would not make and publish a final determination on no significant hazards consideration because such a determination is needed only if a hearing request is received and the Commission decides to make the amendment immediately effective and to provide a hearing after issuance rather than before.

If it receives a hearing request during the comment period and the Commission has decided that no significant hazards consideration is involved, it would prepare a "final determination" on that issue, make the requisite safety and public health findings, and proceed to issue the amendment. The hearing request would be treated the same way as in previous Commission practice, that is, by providing any requisite hearing after the amendment has been issued. As explained before, the legislation permits the Commission to make an amendment immediately effective, notwithstanding the pendency before it of a request for a hearing from any person (even one that meets the provisions for intervention in § 2.714), in advance of the holding and completion of any required hearing.

where it has determined that no significant hazards consideration is involved. The Commission wishes to state in this regard that any question about its staff's determinations on the issue of significant versus no significant hazards consideration that may be raised in any hearing on the amendment will not stay the effective date of the amendment.

The Commission believes that the procedure just described would be its usual way of handling license amendments, because most of these do not involve emergency or exigent situations and do not entail a determination that significant hazards consideration is involved. These three situations and other unusual ones could arise though.

Returning to the initial receipt of an application, if the Commission receives an amendment request and then determines that a significant hazards consideration is involved, it would handle this request in the same way it does now, by issuing an individual notice of proposed action and providing an opportunity for a hearing under § 2.105. The only change in its present procedure would be that it could notify the public of the final disposition of the amendment by noting its issuance or denial in the monthly **Federal Register** notice instead of in an individual notice.

Another possibility might be that the Commission receives an amendment request and finds an emergency situation, where failure to act in a timely way would result in derating or shutdown of a nuclear power plant. In this case, also discussed later in connection with State consultation, it may proceed to issue the license amendment, if it determines, among other things, that no significant hazards consideration is involved. In this circumstance, the Commission might not necessarily be able to provide for prior notice for opportunity for a hearing or for prior notice for public comment and might therefore use its present procedure, publishing an individual notice of issuance under § 2.106 (which provides an opportunity for a hearing after the amendment is issued.) Additionally, the Commission's monthly **Federal Register** notice system would note the Commission's action on the amendment request and, thereby, provide an opportunity for public comment. In connection with emergency requests, the Commission expects its licensees to apply for license amendments in a timely fashion. It will decline to dispense with notice and comment on the no significant hazards consideration determination, if it determines that the applicant has failed to make a timely application for the amendment in order to create the emergency and to take advantage of the emergency provision. Whenever a threatened closure or derating is involved, the Commission expects the applicant to explain to it why this emergency situation has occurred and why the applicant could not avoid it; the Commission will assess the applicant's reasons for failure to file an application sufficiently in advance of that event.

Still another possibility might be that the Commission receives an amendment request and finds an exigency, that is, a situation other than an emergency where swift action is necessary. The legislation, quoted above, states that the Commission should establish criteria which "take into account the exigency of the need for the amendment." The Conference Report, quoted above, points out that "the conference agreement preserves for the Commission substantial flexibility to tailor the notice and comment procedures to the exigency of the need for the license amendment" and that "the conferees expect the content, placement and timing of the notice to be reasonably calculated to allow residents of the area surrounding the facility an adequate opportunity to formulate and submit reasoned comments."

The Commission believes that extraordinary situations may arise, short of an emergency, where a licensee and the Commission must act quickly and where time does not permit the Commission to publish a **Federal Register** notice soliciting public comment or to provide 30 days ordinarily allowed for public comment. For instance, such a circumstance may arise where a licensee, while shutdown for a short time, wishes to add some component clearly more reliable than one presently installed or wishes to use a different method of testing some system and that method is clearly better than one provided for in its Technical Specifications. In either case, the licensee may have to request an amendment, and, if the Commission determines, among other things, that no significant hazards consideration is involved, it may wish to grant the request before the licensee starts the plant up and the opportunity to improve the plant is lost.

In circumstances such as the two just described, the Commission may use media other than the **Federal Register**, for example, a local newspaper published near the licensee's facility, widely read by the residents in the area surrounding the facility, to inform the public of the licensee's amendment request. In these instances, the Commission will provide the public a reasonable opportunity to comment on the proposed no significant hazards determination. To ensure that the comments are received on time, the Commission may also set up in such a situation a toll-free hotline, allowing the public to telephone their comments to NRC on the amendment request. It should be noted that this method of prior notice for public comment will be in addition to the routine notice of the amendment in the monthly **Federal Register** compilation or to any individual notice of hearing that may be published; it will not affect the time available to exercise one's opportunity to request a hearing, though it may provide that opportunity only after the amendment has been issued, when the Commission has determined that no significant hazards consideration is involved.

The Commission will use these procedures sparingly and wants to make sure that its licensees will not take advantage of these procedures. Therefore, it will use criteria, somewhat similar to the ones it will use with respect to emergency situations, to decide whether it will shorten the comment period and change the type of notice normally provided. Consequently, in connection with requests indicating an exigency, the Commission expects its licensees to apply for license amendments in a timely fashion. It will not change its normal notice and public comment practices where it determines that the licensee has failed to use its best efforts to make a timely application for the amendment in order to create the exigency and to take advantage of the exigency provision. Whenever a licensee wants to use this provision, it will have to explain to the Commission the reason for the exigency and why the licensee cannot avoid it; the Commission will assess the licensee's reasons for failure to file an application sufficiently in advance of its proposed action or for its inability to take the action at some later time.

Another different circumstance may also present itself to the Commission. For instance, it could receive an amendment request with respect to which it finds that it is in the public interest to offer an opportunity for a prior hearing. In this case, it would use its present individual notice procedure and notify the public about the final disposition of the amendment in a notice of issuance or denial in its monthly **Federal Register** notice, instead of in an individual notice.

It should also be noted that these procedures only apply to license applications. The Commission may, under existing §§ 2.202(f) and 2.204, make a determination that the public health, safety, or interest requires it to order an amendment without prior notice for public comment or opportunity for a hearing. In this case, the Commission would follow its present procedure and publish an individual notice of issuance in the Federal Register and provide for an opportunity for a hearing on the order.

This new system would change only the Commission's noticing practices; it would not alter the Commission's hearing practices. The Commission has attempted to provide noticing procedures that are administratively simple, involve the least cost, do not entail undue delay, and allow a reasonable opportunity for public comment; nevertheless, they are quite burdensome and involve significant resource impacts and timing delays for the Commission and for licensees requesting amendments. Licensees would be able to reduce these delays, under the proposed procedures, by providing to the Commission their appraisals on the issue of significant hazards. There might also be other ways to make the noticing procedures simpler and to assure that the opportunity for public comment is not curtailed. The Commission is therefore particularly interested in comments addressing the workability of its proposed noticing procedures.

Finally, with respect to amendment requests received before the interim final rule takes effect, the Commission proposes to keep its present procedures and not provide notice for public comment on amendments requested on which the Commission has not acted before the effective date of the interim final rule.

D. State Consultation

As noted above, Public Law 97–415 requires the Commission to consult with the State in which the facility involved is located and to promulgate regulations which prescribe procedures for such consultation on a determination that an amendment to an operating license involves no significant hazards consideration. The Conference Report, cited earlier, stated that the conferees expect that the procedures for State consultation would include the following elements:

(1) The State would be notified of a licensee's request for an amendment;

(2) The State would be advised of the NRC's evaluation of the amendment request;

(3) The NRC's proposed determination on whether the license amendment involves no significant hazards consideration would be discussed with the State and the NRC's reasons for making that determination would be explained to the State;

(4) The NRC would listen to and consider any comments provided by the State official designated to consult with the NRC; and

(5) The NRC would make a good faith attempt to consult with the State prior to issuing the license amendment.

At the same time, however, the procedures for State consultation would not:

(1) Give the State a right to veto the proposed NRC determination;

(2) Give the State a right to a hearing on the NRC determination before the amendment becomes effective;

(3) Give the State the right to insist upon a postponement of the NRC determination or issuance of the amendment; or

(4) Alter present provisions of law that reserve to the NRC exclusive responsibility for setting and enforcing radiological health and safety requirements for nuclear power plants.

In requiring the NRC to exercise good faith in consulting with a State in determining whether a license amendment involves no significant hazards consideration, the conferees recognize that a very limited number of truly exceptional cases may arise when the NRC, despite its good faith efforts, cannot contact a responsible State official for purposes of prior consultation. Inability to consult with a responsible State official following good faith attempts should not prevent the NRC from making effective a license amendment involving no significant hazards consideration, if the NRC deems it necessary to avoid the shut-down or derating of a power plant. *ID.*, at 39.

The Commission believes that the law and its legislative history are quite specific. Accordingly, it proposes to adopt the elements described in the Conference Report quoted above in those cases where it makes a proposed determination on no significant hazards consideration. Normally, the State consultation procedures would work as follows. To make the State consultation process simpler and speedier, the Commission would require an applicant requesting an amendment to send a copy of its appraisal on the question of no significant hazards to the State in which the facility involved is located. (The NRC is compiling a list of State officials who have been designated to consult with it on amendment requests involving no significant hazards considerations; it intends to make this list available to all its licensees with facilities covered by § 50.21(b) or § 50.22 or with testing facilities.)

The Commission would send its Federal Register notice, or other notice in case of exigent circumstances, containing its proposed determination to the State official designated to consult with it together with a request to that person to contact the Commission if there is any disagreement or concern about its proposed determination. If it does not hear from the State in a timely manner, it will consider that the State has no interest in its determination—in this regard, the Commission intends to make available to the designated State officials a list of its Project Managers and other personnel whom it has designated to consult with these officials—but, nevertheless, before it issues the amendment, it will telephone the appropriate State official for the purpose of consultation.

In an emergency situation, the Commission would do its best to consult with the State, before it makes a final determination about no significant hazards consideration, by simply telephoning the appropriate State official before it issues an amendment.

Finally, the Commission wishes to note two points in connection with the legislative history. First, though the Commission intends to give careful consideration to the comments provided to it by the affected State on the question of no significant hazards consideration, the State comments are advisory to the Commission; the Commission remains responsible for making the final administrative decision on the question. Second, State consultation does not alter present provisions of law that reserve to the Commission exclusive responsibility for setting and enforcing radiological health and safety requirements for nuclear power plants.

Paperwork Reduction Act Statement

This rule contains a new reporting requirement which the Office of Management and Budget approved under OMB No. 3150–0011 for the Commission's use through April 30, 1985.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule does not have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants and testing facilities. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121. Since these companies are dominant in their service areas, this rule does not fall within the purview of the Act.

Regulatory Analysis

The Commission has prepared a Regulatory Analysis on these amendments, assessing the costs and benefits and resource impacts. It may be examined at the address indicated above.

General notice of proposed rulemaking is not required for this interim final rule because the amendments by their nature concern rules of agency procedure and practice. Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, notice is hereby given that the following amendments to 10 CFR Parts 2 and 50 are published as a document subject to codification.

List of Subjects

10 CFR Part 2

Administrative practice and procedure, Antitrust, Byproduct material, Classified information, Environmental protection, Nuclear materials, Nuclear power plants, and reactors, Penalty, Sex discrimination, Source material, Special nuclear material, Waste treatment and disposal.

10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting requirements.

48 FR 16649

Published 4/19/83

10 CFR Part 50

Standards for Determining Whether License Amendments Involve No Significant Hazards Considerations

Correction

In FR Doc. 83-9052 beginning on page 14864 in the issue of Wednesday, April 6, 1983, make the following correction on page 14871: In the second column, 19th line from the bottom of the page, insert "and" between "comment" and "may".

≫48 FR 24008

Published 5/27/83

Effective 7/26/83

10 CFR Part 50

Fracture Toughness Requirements for Light-Water Nuclear Power Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is amending its regulations which specify fracture toughness requirements for light-water nuclear power reactors and its requirements for reactor vessel material surveillance programs. The amendments clarify the applicability of these requirements to all plants, modify certain requirements, and shorten and simplify these regulations by more extensively incorporating by reference appropriate National Standards.

EFFECTIVE DATE: July 26, 1983.

FOR FURTHER INFORMATION CONTACT: Dr. P. N. Randall, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (301) 443-5903.

SUPPLEMENTARY INFORMATION: On November 14, 1980 the Nuclear Regulatory Commission published in the **Federal Register** (45 FR 75536) proposed amendments to its regulation, 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," which would amend Appendix G, "Fracture Toughness Requirements," and Appendix H, "Reactor Vessel Material Surveillance Program Requirements." These amendments comprised a proposed general revision of Appendices G and H designed to update them after seven years of use and to make them more consistent with current technology and pertinent National Standards. Interested persons were invited to submit written comment by January 13, 1981. Thirteen letters of comment were received. All were from utilities or vendors and addressed the application of specific requirements contained in the proposed rule. There were no adverse general comments or objections to the proposed revisions. A brief summary of the more significant comments and the staff responses follows:

The most significant technical question, which affects pressure-temperature limits for all plants, concerned a new requirement for fracture control at structural discontinuities, contained in paragraph IV.A.2 of Appendix G. The critical locations are the closure flange regions of the reactor vessel where bending stress is introduced during boltup. The requirement in the proposed rule was that the temperature at the highly stressed region be at least 150°F above the reference temperature of the material whenever pressure exceeded 20 percent of the preoperational system hydrostatic test pressure. Commenters felt this was overly restrictive, and cited certain hardships caused during hydrotests and normal heatup and cooldown operations. In response to the comments, the requirement has been revised to provide a separate, lower temperature requirement for hydrotest conditions than for normal operation, consistent with the margins of safety specified in the ASME Code. In addition, the temperature requirement for normal operation was reduced slightly based on further analysis of boltup conditions. Thus, in the final rule, the proposed requirement of 150°F (above the reference temperature of the material) was revised to 90°F for hydrotest and 120°F for normal operation. This requirement will affect principally those plants where radiation damage to the beltline region is low, and the pressure-temperature limits are thus more likely to be controlled by the closure flange regions.

Paragraph IV.A.4. of Appendix G was expanded to specify that the quantity "RT_{NDT} + 60°F" referred to the adjusted reference temperature of the reactor vessel material in the region that was controlling the pressure-temperature limits (beltline or closure flange regions) following the analysis required by paragraph IV.A.2.

The requirements concerning thermal annealing of reactor vessels, given in paragraphs IV.B. and V.D. of Appendix G, represent no basic change from those published in 1973. However, the recent investigation of pressurized thermal shock effects prompted some studies of annealing to identify and resolve possible engineering difficulties. If the results show that changes should be made in paragraph IV.B. or V.D., a further amendment to Appendix G will be issued.

Minor changes in wording were made in several paragraphs, and footnotes were added to clarify the meaning of two paragraphs.

A number of comments addressed the reporting requirements for surveillance reports, paragraphs III.A. and III.C. of Appendix H. Based on commenters suggestions, the Commission has revised the proposed requirement that surveillance reports be submitted within 90 days after completion of testing to require submittal of these reports within 1 year of capsule withdrawal unless an extension is granted. This change simplifies implementation of the requirement, because capsule withdrawal schedules must be approved

by the Director, Office of Nuclear Reactor Regulation, as provided in paragraph II.B.3. of Appendix H. The primary purposes of the requirement—timely reporting of test results and notification of any problems—are accomplished as well by the provisions of the final rule.

Copies of the abstract of comments and the staff's response, which gives a point-by-point discussion of each issue raised by the commenters, and copies of the value-impact analysis supporting the rule are available for public inspection and copying for a fee at the Commission's Public Document Room at 1717 H Street NW., Washington, DC. Single copies may be obtained by written request to the Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: P. N. Randall.

Regulatory Analysis

The Commission has prepared a regulatory analysis for this regulation. The analysis examines the costs and benefits of the rule as considered by the Commission. A copy of the regulatory analysis is available for inspection and copying for a fee at the NRC Public Document Room, 1717 H Street, NW., Washington, DC. Single copies of the analysis may be obtained from P. N. Randall, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (301) 443–5903.

Paperwork Reduction Act Statement

The reporting and recordkeeping requirements contained in this regulation have been approved by the Office of Management and Budget, OMB approval No. 3150–0011.

Regulatory Flexibility Statement

In accordance with Section 605(b) of the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not have a significant economic impact on a substantial number of small entities. This rule affects primarily the utilities that own light water nuclear power reactors, and the vendors of those reactors, none of which meet the definition of "small entities" set forth in Section 601(3) of the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration in 13 CFR Part 121.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of title 5 of the United States Code, the following amendments to 10 CFR Part 50 are published as a document subject to codification.

48 FR 31611

Published 7/11/83

Effective 1/1/84

10 CFR Part 50

Licensed Operator Staffing at Nuclear Power Units

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to require licensees of nuclear power units to provide a minimum number of licensed operators and senior operators on shift at all times to respond to normal and emergency conditions. These requirements will further assure the protection of the health and safety of the public by allowing the senior operator in charge the flexibility to move about the facility as needed while assuring that a senior operator is continuously present in the control room during unit operation.

EFFECTIVE DATE: January 1, 1984.

FOR FURTHER INFORMATION CONTACT: James Norberg, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: 301–443–5863, or Clare Goodman, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: 301–492–4894.

SUPPLEMENTARY INFORMATION:

Background

In the aftermath of the Three Mile Island (TMI) accident, a number of studies and investigations conducted by the NRC, the industry, and others recommended changes in the numbers, qualifications, and organization of nuclear power plant personnel.[1] The "NRC Action Plan Developed as a Result of the TMI–2 Accident" (NUREG–0660), Item I.A.1.3, adopted these recommendations and "Clarification of TMI Action Plan Requirements" (NUREG–0737) was issued to provide interim shift staffing criteria to all licensees of operating units, all applicants for operating licenses, and all holders of construction permits. NUREG–0737 criteria include the provisions that: (a) A shift supervisor with a senior operator's license shall be on site at all times that a nuclear power unit is loaded with fuel; (b) a licensed senior operator shall be in the control room from which a unit is being operated; (c) an individual who holds a senior operator license shall supervise core alterations; and (d) one or more control room operators shall be assigned on shift for each fueled unit depending on the number of units being operated from the control room.

These criteria have been used for licenses issued after the accident at Three Mile Island, and all licensees of operating nuclear power units are aware of the NRC's staffing criteria provided by NUREG–0737. To ensure that all operating nuclear power units are adequately staffed with licensed personnel, the amendment will apply these NUREG–0737 criteria to all operating nuclear power units. The staffing criteria of NUREG–0737 and the current technical specifications for nuclear power units call for more licensed operators than are required by current NRC regulations. Under current NRC regulations it is only necessary to have a licensed senior operator present at the facility or readily available on call during operation, and an operator or senior operator must be present at the controls at all times during operation.

Proposed Rule

On August 30, 1982, the NRC published a proposed rule in the **Federal Register** (47 FR 38135) that would require all licensees of nuclear power units to provide a minimum number of licensed operators and senior operators on shift and a person with a senior operator license in the control room at all times that the unit is being operated. Interested persons, applicants, and licensees were invited to submit written comments to the Secretary of the Commission. After consideration of the

[1] The recommendations of the investigating groups are collected in NUREG–0660, "NRC Action Plan Developed as a Result of the TMI–2 Accident." NUREG–0660, in Appendix E, discusses the availability of the reports prepared by the various organizations. NUREG documents are available for public inspection and copying for a fee in the Commission's Public Document Room at 1717 H Street, NW, Washington, DC. Copies of NUREG documents may be obtained from: the GPO Sales Program, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555 and the National Technical Information Service, Springfield VA 22161.

comments, the staff has amended the proposed rule, as discussed in the following section.

Comments on the Proposed Rule

The Commission received twenty-seven letters commenting on the proposed rule. Copies of those letters and an analysis of the comments are available for public inspection and copying for a fee at the NRC Public Document Room at 1717 H Street, NW, Washington, DC.

Implementation Schedule

A large number of the comments received stated that the implementation schedule for this rule is too ambitious. The long lead time necessary to acquire, train and license operators may make it very difficult to meet a near-term requirement to increase the number of operators required during operation. Additionally, several comments suggested that one means of easing the manpower problem would be to allow the second senior operator to replace the shift technical advisor. In a related effort, the Commission has under consideration a draft policy statement which would allow the functions of a senior operator and a shift technical advisor to be merged. In order to allow time to acquire, train, and license the required number of operators, the implementation date for the rule has been delayed one year, to January 1, 1984. All licensees of nuclear power units will be expected to meet these staffing requirements by January 1, 1984.

Licensees that believe they cannot meet this deadline must submit a request for an extension by October 1, 1983, to the Director of the Office of Nuclear Reactor Regulation. In that request they should address the following criteria:

1. Whether the licensee is firmly committed to hire and train the necessary number of operators. This criterion will be used to assure that a real and continuing effort will be made to meet the intent of the rule.

2. Whether the licensee has set a reasonable target date by which it would meet the requirements. This criterion will assure that the upgraded staffing requirements will be met as quickly as possible, rather than delayed simply because the option was there.

3. Whether the licensee has an active recruitment program to hire the necessary numbers of operators. This criterion will be used to indicate whether or not the licensees have realistically considered the effects of attrition.

4. Whether the licensee has an adequate training program to assure that it has well-trained operators readily available. This criterion will be used to assess the estimates of the percentage of candidates that can be reasonably expected to become licensed and to ensure that the operators who control the unit while in a reduced staffing capacity are adequately trained.

5. Whether implementation of the rule would adversely affect the licensee's training program, overtime practices, number of shifts, or length of shift. This criterion will be used to assess the possible negative effect on safety of requiring increased staffing levels if this increase is made at the expense of excessive overtime, the training program, or the number of shifts available.

This request will be reviewed in accordance with the provisions of 10 CFR 50.54 by the Director of the Office of the Nuclear Reactor Regulation using the criteria listed above and any other information which is considered to be pertinent to the request. If the licensee demonstrates good cause for the request, the implementation date will be extended for that unit.

Exemptions From the Substantive Provisions of the Rule

Licensees that wish to be exempted from the substantive requirements of the rule must submit a request in accordance with the provisions of 10 CFR 50.12 and adequately justify reduced staffing levels based on plant size, lack of complexity, or other unique factors. If the licensee demonstrates good cause for the request, it will be granted.

Justification for the Provisions of the Rule

Several commentors stated that the NRC had not provided adequate justification of the need for codifying the proposed staffing requirements and that the comment period should be extended until the staff develops a technical basis which demonstrates an increase in safety as a result of implementation of the rule. While an empirical data base which specifies the exact number and qualifications of licensed operators needed on shift at nuclear power plants does not exist, the basis described below is considered sufficient to warrant these increased staffing requirements pending confirmation by research programs which are planned or are currently underway.

The Commission notes, in this regard, that although these staffing levels have been Commission policy for several years, they have not previously been codified through rulemaking because of a belief that the industry recognized the importance of adequate, competent staffing and would voluntarily implement these staffing levels. However, that assumption has been proven false in several cases. The Commission has therefore decided that to protect the health and safety of the public, it is necessary to adopt this rule to guarantee that all plants have an adequate number of licensed operators and senior operators available on shift. The changes made to the existing requirements and the bases for them are:

(a) A shift supervisor with a senior operator's license shall be on site at all times that any unit is loaded with fuel. The presence of this individual will assure that a technically competent supervisor will be present on each shift to direct the overall operation of the plant. A situation can arise at any time that requires the presence of someone with knowledge of the facility's technical specifications and the conditions and limitations in the facility license. Under current NRC requirements, senior operators are examined in more depth and more areas concerning a unit's conditions, limitations, and specifications than a reactor operator or unlicensed manager. In addition, a senior operator normally has more operational experience, further enhancing the senior operator's ability to respond to any situation that may occur. The absence of this knowledge on site, where it is readily available, could possibly create a hazardous condition. This person is required to be on site at all times that any unit is loaded with fuel, rather than just when a unit is being operated because the conditions and limitations in the facility's license and in the facility's technical specifications continue to apply.

(b) A senior operator shall be present at all times in the control room from which a unit is being operated. A senior operator's technical expertise is required in the control room in addition to a reactor operator's technical expertise because of the differences in their training programs and experience. A senior operator typically has greater operating experience than a reactor operator. Also, a senior operator is trained and examined in seven areas that are not required for a reactor operator. These areas are conditions and limitations in a facility license, design and operating limitations in the technical specifications, certain radiation hazards, coolant chemistry, procedures and limitations involved in core alterations and rod programming, fuel handling facilities and procedures, and procedures and equipment available for handling and disposal of radioactive materials. More detailed knowledge in some of these areas would be helpful to the operators in the control room in the event of an emergency. In addition, a senior operator's knowledge and analytic abilities in heat transfer and fluid flow are tested in more depth than a reactor operator's knowledge and

analytic abilities. Individuals with this knowledge have a better basis to provide a broader viewpoint and, therefore, should be available in the control room of an operating nuclear power plant at all times.

The requirement for a senior operator's continuous presence in the control room would assure that: (1) A person is available who can provide the oversight function of the supervisor so that the probability of correctly detecting abnormal events early enough to mitigate potential adverse consequences might be increased; (2) the senior operator in the control room is aware of plant conditions prior to and resulting from an abnormal event so that the senior operator will be able to use extra experience, training and knowledge to act promptly to mitigate that event; and (3) the reactor operator is able to direct attention to performing the immediate actions necessary to mitigate that event rather than having to brief the senior operator about the background of that event if that person were absent from the control room. It cannot be foreseen how quickly accidents will develop; having a senior operator in the control room at the initiation of any incident, rather than several minutes later if the senior operator is simply on site, could alleviate potentially serious consequence of foreseeable accidents. The presence of a senior operator, with increased experience and training, will also increase the probability of correctly detecting abnormal events and human error early enough to mitigate potential consequences of any accident. The Commission finds that these considerations are sufficient to justify imposition of the requirement that a senior operator be present at all times in the control room from which a unit is being operated.

Also, the additional senior operator is required in order to avoid limiting the shift supervisor's freedom to move about the plant as needed during normal and emergency situations. A senior operator may have to use knowledge and training to act outside the control room to mitigate the consequences of any accident and to deal with such items as technical communications regarding operations or emergency responses or to supervise at the site of the emergency within the plant. Another individual licensed as a senior operator is also necessary to provide routine relief for the senior operator in the control room should it be necessary to leave the control room for any reason. Finally, it is not envisioned that any individual senior operator assigned to the control room will be prevented from periodically touring the plant.

It must also be noted that the rule does not define "control room." Since some control rooms are defined so that a senior operator can be within the confines of the control room but not have direct and prompt access to information on current plant conditions, some additional clarification is necessary. The senior operator in the control room is expected to normally spend most of the time in that portion of the control room where there is direct and prompt access to information on current plant conditions and where the operator at the controls can be supervised. As duties may necessitate, the senior operator is to have the flexibility to periodically move to other parts of the control room. However, the senior operator should remain, at all times, in a position to provide prompt assistance to the reactor operators when requested. Additionally, this means that the senior operator must either (1) be in sight of or in the audible range of the reactor operators at the controls, or (2) be in the audible range of the control room annunciators. This is necessary so that the senior operator's training and knowledge will be immediately available as needed. The staff plans to amend Regulatory Guide 1.114, "Guidance on Being an Operator at the Controls of a Nuclear Power Plant," to include more detailed guidance on this subject.

(c) Core alterations shall be supervised by an individual who holds a senior operator license or a senior operator license limited to fuel handling for that unit. This requirement is based on the need for the presence during core alteration of a person whose training exceeds the minimum requirements for a reactor operator in the areas of: conditions and limitations in the facility license, the facility's technical specifications, procedures and limitations involved in core alterations, and fuel handling facilities and procedures. The presence of a person trained in these areas is necessary to assure that core alterations are conducted safely and do not endanger those working on the alterations. This training can be achieved by either successfully completing the requirements for a senior operator license, or by completing those portions of the requirements for a senior operator license which are applicable to core alterations.

(d) Each unit shall have one licensed operator at the controls at all times in addition to the requirement for a senior operator in the control room, and operating units shall have an additional licensed operator assigned to the unit. The requirement that an operator be at the controls is consistent with existing NRC regulations and will assure that plant instrumentation is continuously monitored and that controls are properly manipulated. The requirement for an additional licensed operator for operating units is necessary so that a qualified individual will be able to provide relief for the operator at the controls. The senior operator in the control room cannot be relied on for such relief under the rule because having the senior operator perform the functions of a reactor operator, even for a limited time, would result in loss of the oversight function of the supervisor which might decrease the probability of correctly detecting abnormal events early enough to mitigate potential adverse consequences. If the senior operator in the control room was without a second licensed individual to monitor plant instrumentation and manipulate controls, the senior operator might not be able to oversee and observe other relevant plant conditions. The additional licensed operator is also needed to assure that a licensed operator is available to perform other duties, such as conducting valve line-up checks, taking routine tours, investigating problem areas, and providing assistance during emergencies. It is necessary to have a licensed operator available for these tasks because the training that is provided to operators gives greater assurance that problems will be discovered and mitigated quickly.

Substantive Changes to the Proposed Rule

Based on the comments received, the following substantive changes have been incorporated into the final rule:

(1) The implementation date for the rule was revised from January 1, 1983 to January 1, 1984. (*See* §§ 50.54(m)(2) and (m)(3).)

(2) The points selected for the transition from "not operating" to "operating" were changed to be consistent with the operating mode definitions in the standard technical specifications and the phrase "For the purpose of this table . . ." was added to ensure that this footnote is not used as a definition of "operating" in other sections of title 10. (*See* § 50.54(m)(2)(i) footnote (2).)

(3) The rule was changed to allow for temporary deviations from the required minimum staffing levels to provide for unexpected situations such as illness of an operator during a shift. (*See* § 50.54(m)(2)(i) footnote (1).)

(4) The rule has been changed to state clearly that a senior operator with responsibility for overall plant operation shall be on site at all times that a nuclear unit is loaded with fuel. (*See* § 50.54(m)(2)(ii).)

(5) The rule has been changed to state clearly that a minimum of two operators (the senior operator in the control room

and the operator or senior operator at the controls) shall be in the control room during operation and that an operator or senior operator shall be present at the controls at any time a unit is loaded with fuel. (*See* § 50.54(m)(2)(iii).)

(6) The requirement for core alterations to be supervised by a senior operator has been revised to allow core alterations to be supervised by a senior operator or a senior operator whose license is limited to fuel handling. (*See* § 50.54(m)(2)(iv).)

Paperwork Reduction Act Statement

The information collection requirements contained in this final rule impact nine or fewer entities and, therefore, are not subject to Office of Management and Budget clearance as required by 44 U.S.C. 3501, et seq.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not have a significant economic impact on a substantial number of small entities. This rule affects the staffing requirements of facilities licensed under the provisions of 10 CFR § 50.21(b) and 10 CFR § 50.22. The companies that own these facilities do not fall within the scope of "small entities" as set forth in the Regulatory Flexbility Act or the small business size standards set out in regulations issued by the Small Business Administration in 13 CFR Part 121.

Regulatory Analysis

The Commission has prepared a regulatory analysis of this regulation. The analysis examines the costs and benefits of the alternatives considered by the Commission. Interested persons may examine a copy of the regulatory analysis at the NRC Public Document Room, 1717 H Street, NW. Washington, DC. Single copies of the analysis may be obtained from Clare Goodman, U.S. Nuclear Regulatory Commission, Washington, DC 20555, 492–4894.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

PART 50—DOMESTIC LICENSING OF PRODUCTION AND UTILIZATION FACILITIES

Under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 552 and 553, the following amendments to 10 CFR Part 50 are published as a document subject to codification.

48 FR 33850
Published 7/26/83
Effective 1/1/84
Licensee Event Report System

See Part 20 Statements of Consideration

≫48 FR 39039
Published 8/29/83
Effective 1/1/84

10 CFR Part 50

Immediate Notification Requirements of Significant Events At Operating Nuclear Power Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations which require timely and accurate information from licensees following significant events at commercial nuclear power plants. Experience with existing requirements and public comments on a proposed revision of the rule indicate that the existing regulation should be amended to clarify reporting criteria and to require early reports only on those matters of value to the exercise of the Commission's responsibilities. The amended regulation will clarify the list of reportable events and provide the Commission with more useful reports regarding the safety of operating nuclear power plants.

EFFECTIVE DATE: January 1, 1984.

FOR FURTHER INFORMATION CONTACT: Eric W. Weiss, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555: Telephone (301) 492–4973.

SUPPLEMENTARY INFORMATION:

I. Background

On February 29, 1980, the Commission amended its regulations without prior notice and comment to require timely and accurate licensee reporting of information following significant events at operating nuclear power reactors (45 FR 13434). The purpose of the rule was to provide the Commission with immediate reporting of twelve types of significant events where immediate Commission action to protect the public health and safety may be required or where the Commission needs accurate and timely information to respond to heightened public concern. Although the rule was made immediately effective, comments were solicited. Many commenters believed the rule was in some respects either vague and ambiguous or overly broad.

After obtaining experience with notifications required by the rule, the Commission published in the **Federal Register** a notice of proposed rulemaking on December 21, 1981 (46 FR 61894) and invited public comment. The proposal was made to meet two objectives: change 10 CFR 50.54 to implement Section 201 of the NRC's 1980 Fiscal Year Authorization Act and change 10 CFR 50.72 to more clearly specify the significant events requiring licensees to immediately notify NRC.

The problems and issues which this rulemaking addresses and the solutions that it provides can be summarized in five broad areas:

1. Authorization Act for FY80

Section 201 of the Nuclear Regulatory Commission Authorization Act for Fiscal Year 1980 (Pub. L. 96–295) provides:

(a) Section 103 of the Atomic Energy Act of 1954 is amended by adding at the end thereof the following new subsections: f. Each license issued for a utilization facility under this section or section 104b. shall require as a condition thereof that in case of any accident which could result in an unplanned release of quantities of fission products in excess of allowable limits for normal operation established by the Commission, the licensee shall immediately so notify the Commission. Violation of the condition prescribed by this subsection may, in the Commission's discretion, constitute grounds for license revocation. In accordance with section 187 of this Act, the Commission shall promptly amend each license for a utilization facility issued under this section or section 104b. which is in effect on the date of enactment of this subsection to include the provisions required under this subsection.

Accordingly, this rulemaking includes an amendment to 10 CFR 50.54 that would add an appropriate notification requirement as a condition in the operating license of each nuclear utilization facility licensed under section 103 or 104b. of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2133, 2134b. These facilities generally are the commercial nuclear power facilities which produce electricity for public consumption. Research and test reactors are not subject to the license condition as they are licensed under section 104a. or 104c. of the Act. Under the amendment to 10 CFR 50.54, licensees falling under sections 103 or 104b. would be required, as a condition of their respective operating licenses, to notify the NRC immediately of events specified in 10 CFR 50.72.

2. Unnecessary Reports

Several categories of reports required by § 50.72 are not useful to the NRC. Among these categories are reports of: worker injury, small radioactive releases, and minor security problems. For example, reports are presently required if a worker onsite experience chest pains or another illness not related to radiation and is sent to a hospital for evaluation; or if the vent stack monitor moves upward a few percent yet radiation levels remain 100,000 times below technical specification limits; or if the security computer malfunctions for a few minutes.

This rulemaking eliminates such reporting requirements from § 50.72 and in general clarifies and narrows the scope of reporting. However, revision of Part 73 of the Commission's regulations is necessary to resolve all problems with security reports.

3. Terminology, Phrasing, and Reporting Thresholds

The various sections of 10 CFR 50 have different phrasing, terminology, and thresholds in the reporting criteria. Even when no different meaning is intended a change in wording can cause confusion.

This rulemaking has been carefully written to use terminology, phrasing, and reporting thresholds that are either identical to or similar to those in § 50.73, whenever possible. Other conforming amendments to Parts 20, 21, 73, and in § 50.55 and Appendix E of Part 50 are under development.

As a parallel activity to the preparation of § 50.72, on July 26, 1983, the Commission has published a Licensee Event Report (LER) Rule (§ 50.73) which requires licensees for operating nuclear power plants to prepare detailed written reports for certain events (48 FR 33850).

4. Coordination with Licensee's Emergency Plan

The current scheme for licensees' emergency plans includes four Emergency Classes. When the licensee declares one of the four Emergency Classes, it must report this to the Commission as required by § 50.72. The lowest of the four Emergency Classes, Notification of Unusual Event, has resulted in unnecessary emergency declarations. Events that fall within the Unusual Event class have been neither emergencies in themselves nor precursors of more serious events that are emergencies.

Although changes to the definition of the Emergency Classes are not being made in this rulemaking, a new reporting scheme that would ultimately eliminate "Unusual Event" as an Emergency Class requiring notification can be adopted consistent with this rule. A proposed rulemaking which would redefine the Emergency Classes in § 50.47 is in preparation and may soon be published for public comment. This final rulemaking makes possible the elimination of "Unusual Event" as an emergency class without further amendment of § 50.72 by including in the category of non-Emergencies the subcategory of "one-hour reports."

5. Vague or Ambiguous Reporting Criteria

The reporting criteria in § 50.72 have been revised in order to clarify their scope and intent. The criteria were revised for the proposed rule and in response to public comment. The "Analysis of Comments" portion of this Federal Register notice describes in more detail specific examples of changes in wording intended to eliminate vagueness or ambiguity.

II. Analysis of Comments

Twenty letters of comment were received in response to the Federal Register notice published on December 21, 1981 (46 FR 61894).[1] Of the twenty letters of comment received, the vast majority (15 of 20) were from utilities owning or operating nuclear power plants. This Federal Register notice described the proposed revision of 10 CFR 50.72, "Notification of Significant Events," and 10 CFR 50.54, "Conditions of Licenses." A discussion of the more significant comments follows:

[1] Copies of these documents are available for public inspection and copying for a fee in the NRC Public Document Room, 1717 H Street, N.W., Washington, D.C. 20555

Conditions of Licenses (§ 50.54)

A few commenters said that the "Commission already has the ability to enforce its regulations and does not need to incorporate the items as now proposed into conditions of license."

The Commission has decided to promulgate the proposed revision of § 50.54, "Conditions of Licenses," in order to satisfy the intent of Congress as expressed in Section 201 of the Nuclear Regulatory Commission Authorization Act for Fiscal Year 1980. This Act and its relationship to § 50.54 are discussed in detail in the Federal Register notice for the proposed rule (46 FR 61894).

Coordination With Other Reporting Requirements (Final Rule § 50.72)

Seven commenters said that the NRC should coordinate the requirements of 10 CFR 50.72 with other rules, with NUREG–0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Plants," and with Regulatory Guide 1.16, "Reporting of Operating Information . . ." Many of these letters identified overlap, duplication, and inconsistency among NRC's reporting requirements.

The Commission is making a concerted effort to ensure consistent and coordinated reporting requirements. The requirements contained in the revision of 10 CFR 50.72 are being coordinated with revision of § 50.73, § 50.55(e), Appendix E of Part 50, § 20.402, § 73.71, and Part 21.

Citing 10 CFR 50.72 as a Basis for Notification (Final Rule § 50.72(a)(4))

A few commenters objected to citing § 50.72 as a basis when making a telephone notification. The letters of comment questioned the purpose, legal effect, and burden on the licensee.

The Commission does not believe that it is an unnecessary burden for a licensee to know and identify the basis for a telephone notification required by § 50.72. There have been many occasions when a licensee could not tell the NRC whether the telephone notification was being made in accordance with Technical Specifications, 10 CFR 50.72, some other requirement, or was just a courtesy call. Unless the licensee can identify the nature of the report, it is difficult for the NRC to know what significance the licensee attaches to the report, and it becomes more difficult for the NRC to respond quickly and properly to the event.

READEX FICHE

Immediate Shutdown (Final Rule § 50.72(b)(1)(i))

Several commenters objected to the use of the term, "immediate shutdown," saying that Technical Specifications do not use such a term.

The term is used in some but not all Technical Specifications. Consequently, the Commission has revised the reporting criterion in question. The final rule requires a report upon the initiation of any nuclear power plant shutdown required by Technical Specifications.

Plant Operating and Emergency Procedures (Final Rule § 50.72(b)(1)(ii))

Several commenters said that the reporting criteria should not make reference to plant operating and emergency procedures because:

a. It would take operators too long to decide whether a plant condition was covered by the procedures,

b. The procedures cover events that are not of concern to the NRC, and

c. The procedures vary from plant to plant.

While the plant operating personnel should be familiar with plant procedures, it is true that procedures vary from plant to plant and cover events other than those which compromise plant safety. However, the wording of the reporting criteria has been modified (§ 50.72(b)(1)(ii) in the final rule) to narrow the reportable events to those that significantly compromise plant safety. Notwithstanding the fact that the procedures vary from plant to plant, the Commission has found that this criterion results in notifications indicative of serious events. The narrower, more specific wording will make it possible for plant operating personnel to identify reportable events under their specific operating procedures.

Building Evacuation (Final Rule § 50.72(b)(1)(iii))

Ten commenters said that the proposed § 50.72(b)(6)(iii) regarding "any accidental, unplanned or uncontrolled release resulting in evacuation of a building" was unclear and counterproductive in that it could cause reluctance to evacuate a building. Many of these commenters stated that the reporting of in-plant releases of radioactivity that require evacuation of individual rooms was inconsistent with the general thrust of the rule to require reporting of significant events. They noted that minor spills, small gaseous waste releases, or the disturbance of contaminated particulate matter (e.g., dust) may all require the temporary evacuation of individual rooms until the airborne concentrations decrease or until respiratory protection devices are utilized. They noted that these events are fairly common and should not be reportable unless the required evacuation affects the entire facility or a major part of it.

The Commission agrees. The wording of this criterion has been changed to include only those events which significantly hamper the ability of site personnel in performance of duties necessary for safe operation.

One commenter was concerned that events occurring on land owned by the utility adjacent to its plant might be reportable. This is not the intent of this reporting requirement. The NRC is concerned with the safety of plant and personnel on the utility's site and not with non-nuclear activities on land adjacent to the plant.

Explicit Threats (Final Rule § 50.72(b)(1)(vi))

A few commenters said that the intent of the term, "explicitly threatens," was unclear. Those commenting wondered what level of threat was involved. The term, "explicitly threatens," has been deleted from the final rule. Instead, the final rule refers to "any event that poses an actual threat to the safety of the nuclear power plant" [§ 50.72(b)(1)(vi)] and gives examples so that it is clear the Commission is interested in real or actual threats as opposed to threats without credibility.

Notification Timing (Final Rule § 50.72(b)(2))

The commenters generally had two points to make regarding the timing of reports to the NRC. First, the comments supported notification of the NRC after appropriate State or local agencies have been notified. Second, two commenters requested a new four-to six-hour report category for events not warranting a report with one hour.

Allowing more time for reporting some non-Emergency events would lessen the impact of reporting on the individuals responsible for maintaining the plant in a safe condition. Limiting the extension of the deadline to four hours ensures that the report is made when the information is fresh in the minds of those involved and that it is more likely to be made by those involved rather than by others on a later shift.

Other, more significant non-Emergency events and all declarations of an Emergency must continue to be reported within one hour. The one-hour deadline is necessary if the Commission is to fulfill its responsibilities during and following the most serious events occurring at operating nuclear power plants. A deadline shorter than one hour was not adopted because the Commission does not want to interfere with the operator's ability to deal with an accident or transient in the first few critical minutes.

Therefore, based on these comments and its experience, the NRC has established a "four-hour report," as was suggested.

Reactor Scrams (Final Rule § 50.72(b)(2)(ii))

Several commenters said that reactor scrams, particularly those scrams below power operation, should not require notification of the NRC within one hour.

In response to these comments, the Commission had changed the reporting deadline to four hours. However, the Commission does not regard reactor scrams as "non-events," as stated in some letters of comment. Information related to reactor scrams has been useful in identifying safety-related problems. The Commission agrees that four hours is an appropriate deadline for this reporting requirement because these events are not as important to immediate safety as are some other events.

Radioactive Release Threshold (Final Rule § 50.72(b)(2)(iv))

Several commenters said that the threshold of 25% of allowable limits for radioactive releases was too low for one-hour reporting.

Based upon these comments and its experience, the Commission has changed the threshold of reporting to those releases exceeding two times Part 20 concentrations when averaged over a period of one hour. This will eliminate reports of releases that represent negligible risk to the public.

The Commission has found that low level radioactive releases below two times Part 20 concentrations do not, in themselves, warrant immediate radiological response.

This paragraph requires the reporting of those events that cause an unplanned or uncontrolled release of a significant amount of radioactive material to offsite areas. Unplanned releases should occur infrequently; however, when they occur, at least moderate defects have occurred in the safety design or operational control established to avoid their occurrence and, therefore, these events should be reported.

Personnel Radioactive Contamination (Final Rule § 50.72(b)(2)(v))

Several commenters objected to the use of vague terms such as "extensive

onsite contamination" and "readily removed" in one of the reporting criteria of the proposed rule.

Based on this comment, new criteria have been prepared that use more specific terms. For example, one new criterion requires reporting of "Any event requiring the transport of a radioactively contaminated person to an offsite medical facility for treatment." Experience with telephone notifications made to the NRC Operations Center suggests that this new criterion will be easily understood.

III. Paragraph-by-Paragraph Explanation of the Rule

Paragraph 50.72(a) reflects some consolidation of language that was repeated in various subparagraphs of the proposed rule. In general, the intent and scope of this paragraph do not reflect any change from the proposed rule.

Several titles were added to this and subsequent sections. For example, paragraph 50.72(b) is titled "Non-Emergency Events" and it has two subparagraphs: (b)(1), titled, "One-Hour Reports" and (b)(2), "Four-Hour Reports." The events which have a one-hour deadline are those having the potential to escalate to an Emergency Class. The four-hour deadline is explained in the analysis of paragraph (b)(2).

Paragraph 50.72(b)(1)(i)(A) requires reporting of "The initiation of any nuclear plant shutdown required by Technical Specifications." Although the intent and scope have not changed, the change in wording between the proposed and final rule is intended to clarify that prompt notification is required once a shutdown is initiated.

In response to public comment, the term "immediate shutdown" that was used in the proposed rule is not used in the final rule. The term was vague and unfamiliar to those licensees who did not have Technical Specifications using the term.

This reporting requirement is intended to capture those events for which Technical Specifications require the initiation of reactor shutdown. This will provide the NRC with early warning of safety significant conditions serious enough to warrant shutdown of the plant.

Paragraph 50.72(b)(1)(i)(B) was added to be consistent with existing requirements in § 50.54(x) and the existing § 50.72(c) as published in the **Federal Register** on April 1, 1983 (48 FR 13966) which require the licensee to notify the NRC Operations Center by telephone when the licensee departs from a license condition or technical specification.

Paragraph 50.72(b)(1)(ii), encompassing events previously classified as Unusual Events and some events captured by proposed § 50.72(b)(1) was added to provide for consistent, coordinated reporting requirements between this rule and 10 CFR 50.73 which has a similar provision. Public comment suggested that there should be similarity of terminology, phrasing, and reporting thresholds between § 50.72 and § 50.73. The intent of this paragraph is to capture those events where the plant, including its principal safety barriers, was seriously degraded or in an unanalyzed condition. For example, small voids in systems designed to remove heat from the reactor core which have been previously shown through analysis not to be safety significant need not be reported. However, the accumulation of voids that could inhibit the ability to adequately remove heat from the reactor core, particularly under natural circulation conditions, would constitute an unanalyzed condition and would be reportable. In addition, voiding in instrument lines that results in an erroneous indication causing the operator to misunderstand the true condition of the plant is also an unanalyzed condition and should be reported.

The Commission recognizes that the licensee may use engineering judgment and experience to determine whether an unanalyzed condition existed. It is not intended that this paragraph apply to minor variations in individual parameters, or to problems concerning single pieces of equipment. For example, at any time, one or more safety-related components may be out of service due to testing, maintenance, or a fault that has not yet been repaired. Any trivial single failure or minor error in performing surveillance tests could produce a situation in which two or more often unrelated, safety-grade components are out-of-service. Technically, this is an unanalyzed condition. However, these events should be reported only if they involve functionally related components or if they significantly compromise plant safety. When applying engineering judgement, and there is a doubt regarding whether to report or not, the Commission's policy is that licensees should make the report.

Finally, this paragraph also includes material (e.g., metallurgical or chemical) problems that cause abnormal degradation of the principal safety barriers (i.e., the fuel cladding, reactor coolant system pressure boundary, or the containment). Examples of this type of situation include:

(a) Fuel cladding failures in the reactor, or in the storage pool, that exceed expected values, or that are unique or widespread, or that are caused by unexpected factors, and would involve a release of significant quantities of fission products.

(b) Cracks and breaks in the piping or reactor vessel (steel or prestressed concrete) or major components in the primary coolant circuit that have safety relevance (steam generators, reactor coolant pumps, valves, etc.).

(c) Significant welding or material defects in the primary coolant system.

(d) Serious temperature or pressure transients.

(e) Loss of relief and/or safety valve functions during operation.

(f) Loss of containment function or integrity including:

(i) Containment leakage rates exceeding the authorized limits,

(ii) Loss of containment isolation valve function during tests or operation,

(iii) Loss of main steam isolation valve function during test or operation, or

(iv) Loss of containment cooling capability.

Paragraph 50.72(b)(1)(iii), encompassing a portion of proposed 50.72(b)(2), was reworded to correspond to a similar provision of 10 CFR 50.73(a)(2)(iii). Making the requirements of 10 CFR 50.72 and 50.73 similar in language increases the clarity of these rules and minimizes confusion.

The paragraph has also been reworded to make it clear that it applies only to acts of nature (e.g., tornadoes) and external hazards (e.g., railroad tank car explosion). References to acts of sabotage have been removed, since these are covered by § 73.71. In addition, threats to personnel from internal hazards (e.g., radioactivity releases) that hamper personnel in the performance of necessary duties are now covered by paragraph 50.72(b)(1)(vi). This paragraph covers those events involving an actual threat to the plant from an external condition or natural phenomenon, and where the threat or damage challenges the ability of the plant to continue to operate in a safe manner (including the orderly shutdown and maintenance of shutdown conditions). The licensee should decide if a phenomenon or condition actually threatens the plant. For example, a minor brush fire in a remote area of the site that is quickly controlled by fire fighting personnel and, as a result, did not present a threat to the plant should not be reported. However, a major forest fire, large-scale

flood, or major earthquake that presents a clear threat to the plant should be reported. As another example, an industrial or transportation accident which occurs near the site, creating a plant safety concern, should be reported.

Paragraph 50.72(b)(1)(iv), encompassing events previously classified as Unusual Events, requires the reporting of those events that result in either automatic or manual actuation of the ECCS or would have resulted in activation of the ECCS if some component had not failed or an operator action had not been taken.

For example, if a valid ECCS signal were generated by plant conditions, and the operator were to put all ECCS pumps in pull-to-lock, though no ECCS discharge occurred, the event would be reportable.

A "valid signal" refers to the actual plant conditions or parameters satisfying the requirements for ECCS initiation. Excluded from this reporting requirement would be those instances where instrument drift, spurious signals, human error, or other invalid signals caused actuation of the ECCS. However, such events may be reportable under other sections of the Commission's regulations based upon other details; in particular, paragraph 50.72(b)(2)(ii) requires a report within four hours if an Engineered Safety Feature (ESF) is actuated.

Experience with notifications made pursuant to § 50.72 has shown that events involving ECCS discharge to the vessel are generally more serious than ESF actuations without discharge to the vessel. Based on this experience, the Commission has made this reporting criterion a "One-Hour Report."

Paragraph 50.72(b)(1)(v), encompassing events previously classified as Unusual Events, covers those events that would impair a licensee's ability to deal with an accident or emergency. Notifying the NRC of these events may permit the NRC to take some compensating measures and to more completely assess the consequences of such a loss should it occur during an accident or emergency.

Examples of events that this criterion is intended to cover are those in which any of the following are not available:

1. Safety parameter display system (SPDS).
2. Emergency Response Facilities (ERF's).
3. Emergency communications facilities and equipment including the Emergency Notification system (ENS).
4. Public prompt Notification System including sirens.
5. Plant monitors necessary for accident assessment.

Paragraph 50.72(b)(1)(vi), encompassing some portions of the proposed §§ 50.72(b) (2) and (6), has been revised to add the phrase, "including fires, toxic gas releases, or radioactive releases." This addition covers the "evacuation" portion of paragraph 50.72(b)(6)(iii) of the proposed rule. This change in wording for the final rule was made in response to public comments discussed above.

While paragraph 50.72(b)(1)(iii) of the final rule primarily captures acts of nature, paragraph 50.72(b)(1)(vi) captures other events, particularly acts by personnel. The Commission believes this arrangement of the reporting criteria in the final rule lends itself to more precise interpretion and is consistent with those pubic comments that requested closer coordination between the reporting requirements in this rule and other portions of the Commission's regulations.

This provision requires reporting of events, particularly those caused by acts of personnel, which endanger the safety of the plant or interfere with personnel in performance of duties necessary for safe plant operations.

The licensee must exercise some judgment in reporting under this section. For example, a small fire on site that did not endanger any plant equipment and that did not and could not reasonably be expected to endanger the plant, is not reportable.

Paragraph 50.72(b)(1) of the proposed rule was split into § 50.72(b)(1)(ii) and *§ 50.72(b)(2)(i)* in the final rule in order to permit some type of reports to be made within four hours instead of one hour because these reports have less safety significance. In terms of their combined effect, the overall intent and scope of these paragraphs have not changed from those in the proposed rule. Since the types of events intended to be captured by this reporting requirement are similar to § 50.72(b)(1)(ii), except that the reactor is shut down, the reader should refer to the explanation of § 50.72(b)(1)(ii) for more details on intent.

Paragraph 50.72(b)(2) Although the reporting criteria contained in the subparagraphs of § 50.72(b)(2) were in the proposed rule, in response to public comment the Commission established this "Non-Emergency" category for those events with slightly less urgency and less safety significance that may be reported within four hours instead of one hour.

The Commission wants to obtain such reports from personnel who were on shift at the time of the event, when this is possible, because these personnel will have a better knowledge of the circumstances associated with the vent. Reports made within four hours of the event should make this possible while not imposing the more rigid one hour requirements.

The reporting requirement in paragraph 50.72(b)(2)(i) is similar to a requirement in § 50.73. Moreover, except for referring to a shutdown reactor, this reporting requirement is also similar to the "One-Hour Report" in § 50.72(b)(1)(ii). However this paragraph applies to a reactor in shutdown condition. Events within this requirement have less urgency and can be reported within four hours as a "Non-Emergency."

Paragraph 50.72(b)(2)(ii) (proposed 50.72(b)(5)) is made a "Non-Emergency" in response to public comment, because the Commission agrees that the covered events generally have slightly less urgency and safety significance than those events included in the "One-Hour Reports."

The intent and scope of this reporting requirement have not changed from the proposed rule. This paragraph is intended to capture events during which an ESF actuates, either manually or automatically, or fails to actuate. ESFs are provided to mitigate the consequences of the event; therefore, (1) they should work properly when called upon and (2) they should not be challenged unnecessarily. The Commission is interested both in events where an ESF was needed to mitigate the consequences of the event (whether or not the equipment performed properly) and events where an ESF operated unnecessarily.

"Actuation" of multichannel ESF Actuation Systems is defined as actuation of enough channels to complete the minimum actuation logic. Therefore, single channel actuations, whether caused by failures or otherwise, are not reportable if they do not complete the minimum actuation logic.

Operation of an ESF as part of a planned test or operational evolution need not be reported. However, if during the test or evolution the ESF actuates in a way that is not part of the planned procedure, that actuation should be reported. For example, if the normal reactor shutdown procedure requires that the control rods be inserted by a manual reactor trip, the reactor trip need not be reported. However, if conditions develop during the shutdown that require an automatic reactor trip, such a reactor trip should be reported. The fact that the safety

analysis assumes that an ESF will actuate automatically during an event does not eliminate the need to report that actuation. Actuations that need not be reported are those initiated for reasons other then to mitigate the consequences of an event (e.g., at the discretion of the licensee as part of a planned procedure).

Paragraph 50.72(b)(2)(iii) (proposed 50.72(b)(4)) has been revised and simplified.

The words "any instance of personal error, equipment failure, or discovery of design or procedural inadequacies" that appeared in the proposed rule have been replaced by the words "event or condition." This simplification in language is intended to clarify what was a confusing phrase to many of those who commented on the proposed rule. Also in response to public comment, this reporting requirement is a "Non-Emergency" to be reported within four hours instead of within one hour.

This paragraph is based on the assumption that safety-related systems and structures are intended to mitigate the consequences of an accident. While paragraph 50.72(b)(2)(ii) applies to actual demands for actuation of an ESF, paragraph 50.72(b)(2)(iii) covers an event where a safety system could have failed to perform its intended function because of one or more personnel errors, including procedure violations; equipment failures; or design, analysis, fabrication, construction, or procedural deficiencies. The event should be reported regardless of the situation or condition that caused the structure or system to be unavailable.

This reporting requirement is similar to one contained in § 50.73, thus reflecting public comment identifying the need for closer coordination of reporting requirements between § 50.72 and § 50.73.

This paragraph includes those safety systems designed to mitigate the consequences of an accident (e.g., containment isolation, emergency filtration). Hence, minor operational events such as valve packing leaks, which could be considered a lack of control of radioactive material, should not be reported under this paragraph. System leaks or other similar events may, however, be reportable under other paragraphs.

This paragraph does not include those cases where a system or component is removed from service as part of a planned evolution, in accordance with an approved procedure, and in accordance with the plant's Technical Specifications. For example, if the licensee removes part of a system from service to perform maintenance, and the Technical Specifications permit the resulting configuration, and the system or component is returned to service within the time limit specified in the Technical Specifications, the action need not be reported under this paragraph. However, if, while the component is out of service, the licensee identifies a condition that could have prevented the system from performing its intended function (e.g., the licensee finds a set of relays that is wired incorrectly), that condition must be reported.

It should be noted that there are a limited number of single-train systems that perform safety functions (e.g., the High Pressure Coolant Injection System in BWRs). For such systems, loss of the single train would prevent the fulfillment of the safety function of that system and, therefore, must be reported even though the plant Technical Specifications may allow such a condition to exist for a specified length of time. Also, if a potentially serious human error is made that could have prevented fulfillment of a safety function, but recovery factors resulted in the error being corrected, the error is still reportable.

The Commission recognizes that the application of this and other paragraphs of this section involves a technical judgment by licensees. In this case, a technical judgment must be made whether a failure or operator action that disabled one train of a safety system could have, but did not, affect a redundant train. If so, this would constitute an event that "could have prevented" the fulfillment of a safety function, and, accordingly, must be reported.

If a component fails by an apparently random mechanism, it may or may not be reportable if the functionally redundant component could fail by the same mechanism. To be reportable, it is necessary that the failure constitute a condition where there is reasonable doubt that the functionally redundant train or channel would remain operational until it completed its safety function or is repaired. For example, if a pump fails because of improper lubrication, there is a reasonable expectation that the functionally redundant pump, which was also improperly lubricated, would have also failed before it completed its safety function, then the failure is reportable and the potential failure of the functionally redundant pump must be reported.

Interaction between systems, particularly a safety system and a non-safety system, is also included in this criterion. For example, the Commission is increasingly concerned about the effect of a loss or degradation of what had been assumed to be nonessential inputs to safety systems. Therefore, this paragraph also includes those cases where a service (e.g., heating, ventilation, and cooling) or input (e.g., compressed air) which is necessary for reliable or long-term operation of a safety system is lost or degraded. Such loss or degradation is reportable, if the proper fulfillment of the safety function is not or can not be assured. Failures that affect inputs or services to systems that have no safety function need not be reported.

Finally, the Commission recognizes that the licensee has to decide when personnel actions *could* have prevented fulfillment of a safety function. For example, when an individual improperly operates or maintains a component, that person might conceivably have made the same error for all of the functionally redundant components (e.g., if an individual incorrectly calibrates one bistable amplifier in the Reactor Protection System, that person could conceivably incorrectly calibrate all bistable amplifiers). However, for an event to be reportable it is necessary that the actions actually affect or involve components in more than one train or channel of a safety system, and the result of the actions must be undersirable from the perspective of protecting the health and safety of the public. The components can be functionally redundant (e.g., two pumps in different trains) or not functionally redundant (e.g., the operator correctly stops a pump in Train "A" and, instead of shutting the pump discharge valve in Train "A," he mistakenly shuts the pump discharge valve in Train "B").

Paragraphs 50.72(b)(2)(iv) (proposed 50.72(b)(6)) has been changed to clarify the requirement to report releases of radioactive material. The paragraph is similar to § 20.403 but places a lower threshold for reporting events at commercial power reactors. The lower threshold is based on the significance of the breakdown of the licensee's program necessary to have a release of this size, rather than on the significance of the impact of the actual release. The existing licensee radioactive material effluent release monitoring programs and their associated assessment capabilities are sufficient to satisfy the intent of 50.72(b)(2)(iv).

Based upon public comment and a reevaluation by the Commission staff, the reporting threshold has been changed from "25%" in the proposed rule to "2 times" in the final rule and has

been reclassified as a "Non-Emergency" to be reported within four hours instead of within 1 hour.

Also this reporting requirement has been changed to make a more uniform requirement by referring to specific release criteria instead of referring only to Technical Specifications that may vary somewhat among facilities.

This reporting requirement is intended to capture those events that may lead to an accident situation where significant amounts of radioactive material could be released from the facility. Unplanned releases should occur infrequently; however, if they occur at the levels specified, at least moderate defects have occurred in the safety design or operational control established to avoid their occurrence and, therefore, such events should be reported.

Normal operating limits for radioactive effluent releases are based on the limits of 10 CFR Part 20 which establishes maximum annual average concentration in unrestricted areas. This reporting requirement addresses concentrations averaged over a one hour period and represents less than 0.1% of the annual quantities of radioactive materials permitted to be released by 10 CFR Part 20.

Paragraph 50.72(b)(2)(v) (proposed rule 50.72(b)(7)) has three changes. The first eliminates the phrase "occurring onsite" because it is implied by the scope of the rule. The second replaces "injury involving radiation" with "radioactively contaminated person." This change was made because of the difficulty in defining injury due to radiation, and more importantly, because 10 CFR Part 20 captures events involving radiation exposure.

The third change, in response to public comment, was to make this reporting requirement a four-hour notification, instead of one-hour notification. This change was made because these events have slightly less safety significance than those required to be reported within one hour.

Paragraph 50.72(b)(2)(vi) (not in proposed rule) besides covering some events such as release of radioactively contaminated tools or equipment to the public that may warrent NRC attention, also covers those events that would not otherwise warrant NRC attention except for the interest of the news media, other government agencies, or the public. In terms of its effect on licensees, this is not a new reporting requirement because the threshold for reporting injuries and radioactive release was much lower under the proposed rule. This criterion will capture those events previously reported under other criteria when such events require the NRC to respond because of media or public attention.

Paragraph 50.72(c) (proposed 50.72(c)) has remained essentially unchanged from the proposed rule, except for addition of the title "Followup Notification" and some renumbering.

This paragraph is intended to provide the NRC with timely notification when an event becomes more serious or additional information or new analyses clarify an event.

This paragraph also permits the NRC to maintain a continuous communications channel because of the need for continuing follow-up information or because of telecommunications problems.

IV. Regulatory Analysis

The Commission has prepared a regulatory analysis on this regulation. The analysis examines the costs and benefits of the Rule as considered by the Commission. A copy of the regulatory analysis is available for inspection and copying for a fee at the NRC Public Document Room, 1717 H Street, NW., Washington, D.C. Single copies of the analysis may be obtained from Eric W. Weiss, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 492–4973.

V. Paperwork Reduction Act Statement

The information collection requirements contained in this final rule have been approved by the Office of Management and Budget pursuant to the Paperwork Reduction Act, Pub. L. 96–511 (clearance number 3150–0011).

VI. Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this regulation will not have a significant economic impact on a substantial number of small entities. This final rule affects electric utilities that are dominant in their respective service areas and that own and operate nuclear utilization facilities licensed under sections 103 and 104b. of the Atomic Energy Act of 1954, as amended. The amendments clarify and modify presently existing notification requirements. Accordingly, there is no new, significant economic impact on these licensees, nor do the affected licensees fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or within the Small Business Size Standards set forth in regulations issued by the Small Business Administration at 13 CFR Part 121.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 50 are published as a document subject to codification.

≫ 48 FR 40882

Published 9/12/83

10 CFR Part 50

Immediate Notification Requirements of Significant Events At Operating Nuclear Power Reactors

Correction

In FR Doc. 83–23602 beginning on page 39039 in the issue of Monday, August 29, 1983, make the following corrections to § 50.72 on page 39046:

1. In the second line of (a)(1) insert the words "licensee licensed" between the words "reactor" and "under".
2. In the second line of (a)(1)(ii) the word "ths" should read "this".
3. In the fourth line of (a)(2) the word "commerical" should read "commercial".
4. In the third and sixth lines of (b)(1)(ii) the word "powerplant" should read "power plant".
5. In the first line of (b)(1)(ii)(A) the word "a" should read "an"
6. In the fourth line of (b)(1)(iii) the word "power-plant" should read "power plant".
7. In the third and sixth lines of (b)(1)(vi) the word "powerplant" should read "power plant". Also in the sixth line of that paragraph the word "nulcear" should read "nuclear".
8. In the fifth line of (b)(2)(i) the word "powerplant" should read power plant".
9. In the second line of (b)(2)(ii) the word "an" should read "any".

48 FR 46489
Published 10/13/83
Effective 11/14/83

Temporary Operating Lincenses

See Part 2 Statement of Consideration

48 FR 50878
Published 11/4/83
Effective 12/7/83

10 CFR Part 50

Codes and Standards for Nuclear Power Plants; Summer 1982 Addenda

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is amending its regulations to incorporate by reference the Summer 1982 Addenda of the American Society of Mechanical Engineers (ASME) Boiler Pressure Vessel Code. The sections of the ASME Code being incorporated provide rules for the construction on nuclear power plant components. Adoption of these amendments will permit the use of improved methods for construction of nuclear power plants.

DATES: effective date: December 7, 1983.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of December 7, 1983.

FOR FURTHER INFORMATION CONTACT: Ms. N. J. Miegel, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 443–7860.

SUPPLEMENTARY INFORMATION: On December 22, 1982 the Nuclear Regulatory Commission published in the Federal Register proposed amendments to its regulation, 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The proposed amendment would revise § 50.55a to incorporate by reference the Summer 1982 Addenda to Section III, Division 1, "Rules for the Construction of Nuclear Power Plant Components," of the ASME Boiler and Pressure Vessel Code.

The incorporation of the new Addenda does not change any of the previous supplementary requirements included in the regulation.

Some of the changes effected in the addenda that are incorporated by this rule follow:

1. The foreword of all sections of the Code was revised regarding interpretations of the Code to restrict the authority to issue such interpretations to the American Society of Mechanical Engineers. Previously, paragraph thirteen of the foreword had permitted the National Board of Boiler and Pressure Vessel Inspectors to issue interpretations of the ASME Boiler and Pressure Vessel Code.

2. Paragraph NCA–8230(b) was revised to delete the requirement that the location of the nameplate for component supports be shown on the support drawing.

3. Code Case N–100, "Pressure Relief Valve Design," was adopted into the body of the Code as paragraph NB–3590. The Code Case will be annulled when the Summer 1982 Addenda become effective.

4. Paragraph NB–5520 was revised to update the reference to the American Society for Nondestructive Testing (ASNT) standard SNT–TC–1A, from the 1975 to the 1980 Edition. It was also revised to clearly state that even if an outside agency or ASNT provided the qualification examinations, the employer is still responsible for certifying its own personnel.

Interested persons were invited to submit written comments for consideration in connection with the proposed amendment by February 22, 1983. One comment was received on the proposed rule. The Summer 1982 Addenda invoke the June 1980 Edition of Recommended Practice No. SNT–TC–1A, "Personnel Qualification and Certification in Nondestructive Testing," in paragraph NB–5520 in lieu of the 1975 Edition of SNT–TC–1A which was previously invoked. The commenter objected to updating the edition of SNT–TC–1A referenced by the Code because the commenter was of the opinion that the 1980 Edition of SNT–TC–1A no longer requires Level III individuals to demonstrate their ability to perform the examinations for which they are being qualified. A detailed comparison of the 1975 and 1980 Editions of SNT–TC–1A reveals that although the requirements for qualifications of Level III individuals were changed, neither edition specifically requires a demonstration of the individual's ability to perform the examination. No changes to the rule were made in response to the comment.

The NRC staff is currently working with a committee of industry representatives that is developing an improved requirements document for the qualification and certification of nondestructive examination personnel. Additionally, the staff is involved in a study of the qualification and certification of various quality assurance and quality control personnel that includes consideration of nondestructive examination personnel. At this time, the staff has not concluded that hands-on practical examinations for Level III nondestructive examination personnel are warranted, and finds that the provisions of the June 1980 Edition of SNT–TC–1A are acceptable for Section III Code activities, pending the development of any new requirements.

In addition to the public comment, there was a concern raised by the NRC staff on the change in the 1980 Edition of SNT–TC–1A to the use of the word "should" in numerous places in the standard where the word "shall" had been used in the past. The concern centered around whether or not the change in language resulted in a change in the enforceability of the provisions of SNT–TC–1A. Because of the staff's concern, an inquiry, NI 83–033, was submitted to the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code Committee, asking for an interpretation of the Code's endorsement of SNT–TC–1A. The response to the inquiry was that regardless of the language used in SNT–TC–1A, the Code's endorsement of SNT–TC–1A makes the provisions of SNT–TC–1A mandatory for Code activities.

Paperwork Reduction Act Statement

This final rule does not contain a new or amended information collection requirement subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). Existing requirements were approved by the Office of Management and Budget approval number 3150–0011.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act of the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121. Since these companies are dominant in their service areas, this rule does not fall within the purview of the Act.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter 1, Code of Federal Regulations, Part 50 are published as a document subject to codification.

48 FR 57477
Published 12/30/83

10 CFR Part 50

Codes and Standards for Nuclear Power Plants; Summer 1982 Addenda; Correction

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule; correction.

SUMMARY: This document corrects the authority citation for the final rule, Codes and Standards for Nuclear Power, Plants, Summer 1982 Addenda, published in the Federal Register on November 4, 1983.

FOR FURTHER INFORMATION CONTACT: John Philips, Rules and Procedures Branch, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492–7086.

SUPPLEMENTARY INFORMATION: The authority citation for 10 CFR Part 50 published on page 50879 on November 4, 1983, is corrected.

For the Nuclear regulatory Commission.

William J. Dircks,

Executive Director for Operations.

49 FR 9352
Published 3/12/84
Effective: Upon approval of OMB or 6/7/84.

Environmental Protection Regulations for Domestic Lincensing and Related Regulatory Functions and Related Conforming Amendments

See Part 51 Statements of Consideration

49 FR 9711
Published 3/15/84
Effective 5/14/84

10 CFR Part 50

Codes and Standards for Nuclear Power Plants

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is amending its regulations which incorporate by reference national codes and standards for the construction of nuclear power plant components. The amendments increase specific references to the ASME Boiler and Pressure Vessel Code to include subsections that provide rules for the construction of certain safety systems and that clarify existing regulations by removing obsolete provisions no longer applicable. This action establishes enforceable requirements to replace previous guidance. In addition, the amendments will ensure appropriate use of the referenced code and clarify NRC application requirements.

EFFECTIVE DATE: May 14, 1984.

FOR FURTHER INFORMATION CONTACT: Mr. A. Taboada, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 443–7903.

SUPPLEMENTARY INFORMATION: On April 13, 1982, the Nuclear Regulatory Commission published in the **Federal Register** (47 FR 15801) proposed amendments to its regulation, 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," which would amend § 50.55a, "Codes and Standards." The proposed amendments constituted a general revision of § 50.55a designed to update NRC requirements after 10 years of experience and make them more consistent with pertinent national standards. More specifically, the proposed amendments would have (a) added specific references to parts of Section III of the ASME Boiler and Pressure Vessel Code which apply to the construction of Classes 2 and 3 components, (b) deleted obsolete references and provisions, and (c) simplified the procedure for authorizing alternatives to certain NRC requirements.

Interested persons were invited to submit written comments by June 14, 1982. Twelve letters of comment were received. Of these, seven commentors supported, in general, the main provision of the proposed amendments to add specific references to additional parts of the ASME Code. One commentor disagreed. Another commentor objected to deleting the exemption from the code requirement for applying the Code N Symbol. Most of the adverse comments dealt with the application of specific requirements. A brief summary of the more significant adverse comments and staff responses follows.

Eight of the commentors objected to the proposed provisions that applied to the classification of components used for determining which part of the ASME Code should apply. Three of the eight replies came directly from the American Nuclear Society (ANS) Standards Committee and contained detailed objections to the classification provisions and recommended that the rule apply the classification systems developed by ANS as set out in the draft standards ANS 51.1 and ANS 52.1. Five of the eight commentors endorsed the letters sent by ANS.

To resolve the question of component classification, the staff met on September 15, 1982, with representatives of ANS and other interested organizations and discussed in detail the existing NRC and industry practices for classification of safety-related components and related problems. Those persons attending the meeting agreed that classification is more appropriately a subject for a regulatory guide than for a regulation since classifications are frequently plant specific and involve so many variables that regulatory controls need to be more flexible. As a result, the NRC has revised the final rule to eliminate detailed classification of components. Instead, general guidance has been added for establishing the classifications. Further, the NRC staff has agreed to evaluate the ANS classification systems for referencing in a Regulatory Guide.

A copy of the comments received on the proposed rule and an abstract of the comments which gives the staff response to each issue raised by the commentors is available for public inspection and copying for a fee at the Commission's Public Document Room at 1717 H Street NW., Washington, DC. Single copies may be obtained by written request to the Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: A. Taboada.

Rulemaking Background

Commission policy, stated in General Design Criterion 1, "Quality Standards and Records" (10 CFR Part 50, Appendix A) and in § 50.55a, prescribes that structures, systems, and components important to safety be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed. In this regard, on June 12, 1971 (36 FR 11423), the Commission incorporated by reference in § 50.55a several codes published by the American Society of Mechanical Engineers (ASME) to be applied to the construction of components of the reactor coolant pressure boundary of water-cooled nuclear power reactors. Section III of the ASME Boiler and Pressure Vessel Code, applicable at that time only to nuclear vessels, was incorporated by reference to establish standards for vessels. Other ASME codes (described below) of more general application were incorporated by reference to establish standards for piping, pumps, and valves.

Subsequently, the ASME Boiler and Pressure Vessel Code Committee expanded Section III of the Code to apply to other nuclear power plant components (including piping, pumps,

and valves) in addition to nuclear vessels. The expansion included many of the appropriate provisions from the more general codes incorporated by reference in § 50.55a on June 12, 1971.

On February 12, 1976 (41 FR 6256), the Commission amended § 50.55a to make the expanded Section III effective code for piping, pumps, and valves of the reactor coolant pressure boundary for water-cooled nuclear plants for which construction permits were issued on or after July 1, 1974. The amendment limited use of the more general codes to plants for which construction permits were issued before July 1, 1974.

Section III of the Code is regularly updated by ASME in new editions and addenda to include new developments and to reflect experience with the use of the Code. Those parts of the new editions and addenda that pertain to the reactor coolant pressure boundary are reviewed by the Commission staff and, if acceptable, are incorporated by reference in § 50.55a. Although not specifically included in the regulations, the remaining parts of Section III that pertain to other systems are also reviewed by the Commission staff and, if acceptable, are used in the evaluation of specific license applications. Several parts of Section III that apply to Class 2 and 3 components have been used as guidance in this manner for approximately 10 years and are referenced in Regulatory Guide 1.26, "Quality Group Classifications and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants."

Presently, other parts of the ASME Nuclear Code (Section III) cover metal containments, component supports, core support structures and concrete vessels. It is the intent of the Commission to incorporate by reference specific parts of the ASME Nuclear Code after appropriate evaluations and as adequate experience with use of each part of the Code confirms its acceptability.

Substance of the Final Rule

Now that experience has shown additional parts of Section III of the ASME Boiler and Pressure Vessel Code to be adequate for use on a general basis, the Commission is adding specific references to these additional parts in § 50.55a. These additions include the requirements for Class 2 Components, which are found in Subsections NC and NCA of the Code, and the requirements of Class 3 Components, which are found in Subsections ND and NCA of the Code.

To clarify the requirements of § 50.55a, the Commission is also deleting obsolete incorporations by reference of general codes which are superseded by Section III of the ASME Code. However, any previous acceptance of general codes by the Commission for nuclear plants for which construction permits were issued prior to these deletions will continue to be in effect, and deletion of these Codes from § 50.55a should not be construed otherwise. The Codes being deleted include:

(a) For piping of the Reactor Coolant Pressure Boundary—

- American Standard Code for Pressure Piping, ASA B31.1
- USA Standard Code for Pressure Piping, USAS B31.1.0
- USA Standard for Nuclear Power Piping, USAS B31.7
- ASA B31.1 Code Cases N7, N9 and N10

(b) For pumps of the Reactor Coolant Pressure Boundary—

- Draft ASME Code for Pumps and Valves for Nuclear Power
- ASA B31.1 Code Cases N7, N9, and N10

(c) For values of the Reactor Coolant Pressure Boundary—

- American Standard Code for Pressure Piping ASA B31.1
- USA Standard Code for Pressure Piping USAS B31.1.0
- Draft ASME Code for Pumps and Valves for Nuclear Power
- ASA B31.1 Code Cases N2, N7, N9 and N10

The Commission is also making two procedural changes in the amendment to § 50.55a. One change deals with the need for NRC authorization for a proposed alternative to requirements in the regulation. The amendment clarifies the existing regulation by providing that the Director of the Office of Nuclear Reactor Regulation may authorize alternatives to the requirements in § 50.55a after demonstration by the applicant that (a) the proposed alternative would provide an acceptable level of quality and safety or (b) compliance with specific requirements would result in a hardship or unusual difficulty without a compensating increase in the level of quality or safety.

The other procedural change deletes the obsolete provision of paragraph (a) that exempts nuclear components constructed to ASME Code rules from the Code requirement that the Code N-symbol stamp be applied to these components. This exemption was initiated when there was no provision for foreign suppliers to comply with the administrative enforcement aspect of the Code. Previously, foreign suppliers, fully qualified in other respects, could not be issued a Code N-symbol stamp to apply to components and, hence, would have been excluded from supplying components for domestic nuclear plants. This situation has been changed and foreign suppliers may now be issued Code N-symbol stamps.

Regulatory Analysis

The Commission has prepared a regulatory analysis for this regulation. The analysis examines the costs and benefits of the rule as considered by the Commission. A copy of the regulatory analysis is available for inspection and copying for a fee at the NRC Public Document Room, 1717 H Street, NW., Washington, D.C. Single copies of the analysis may be obtained from A. Taboada, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (301) 443-7903.

Paperwork Reduction Act Statement

The application, reporting and recordkeeping requirements contained in this proposed regulation have been approved by the Office of Management and Budget; OMB approval No. 3151-0011.

Regulatory Flexibility Statement

This rule (§ 50.55a) requires that certain nuclear power plant components be constructed to the nuclear section of the ASME Boiler and Pressure Vessel Code, the standard used by the nuclear industry to comply with the NRC General Design Criteria and Quality Assurance Criteria. To attest that a component has been found to meet all of the specified Code requirements, the ASME Code requires that the component be stamped with a Code N-Stamp issued to manufacturers qualified through an ASME accreditation survey. The ASME Code also calls for specific inspections and verifications of records by an independent Authorized Inspection Agency (AIA) established by a legal authority (state or municipality). This amendment to § 50.55a expands the applicability of the ASME Code and removes obsolete provisions and the exemption, previously in the rule, that the Code N Symbol Stamp need not be applied.

The direct cost incurred by a small manufacturer as a result of this amendment will vary depending on the circumstances. An estimated 550 manufacturers, approximately 10% of which may be small manufacturers, are already certified as N-Stamp holders by ASME, and it is assumed that they would not incur new costs. An ASME accreditation survey (i.e., audit and evaluation) costs a manufacturer an average of $9000 and recurs at 3 year intervals. The cost for Authorized Inspection Agency services is approximately $250 per day per inspector plus expenses. This service for a small manufacturer would typically include two (one-day) audits per year

and three inspection visits per order but would vary depending on the complexity of the components being manufactured.

On this basis, the direct cost for a small manufacturer to maintain code accreditation and provide the required third party (AIA) inspection is estimated to be as high as $3500 per year assuming that the cost of inspection visits are applied to the price of the component. For multiorders the cost per order for accreditation would be less.

Approximately 30 new firms per year, some of which are expected to be small firms, apply for ASME accreditation to be N stamp holders. For these firms, particularly if new to the nuclear field, additional indirect costs may be incurred in establishing and maintaining an ASME certified shop. Such indirect costs might result from complying with, for example, code requirements for qualifying welders, establishing specific quality control programs, and maintaining appropriate procedures and records. However, since Appendices A and B of 10 CFR Part 50 already require quality standards and a quality assurance program that parallels the ASME Code requirements, and in fact, the ASME Code has become the NRC and industry standard for compliance with these appendices, the costs associated with meeting requirements of Appendices A and B are estimated to be substantially equivalent to the cost of meeting ASME Code requirements. Therefore, the NRC estimates that no major additional cost would be incurred as a result of this rule, by a small manufacturing shop providing nuclear quality products.

The NRC requested comments on the economic impact of this rule on small businesses in the proposed amendment. No comments were received from small businesses. However, two operating utilities commented that this rule would, in effect, preclude the occasional purchase of spare parts or renewal parts from some small shops who probably would not find it economically feasible to establish and maintain an ASME certified shop. NRC estimates that the number of small shops so affected would be few and would not constitute a substantial number of the small businesses involved in nuclear component construction. Further, the rule contains a provision to permit alternatives to specific ASME Code requirements, in case of hardships, that would, in effect, permit the use of such uncertified shops if an equivalent level of quality and safety were provided.

Thus, in accordance with the Regulatory Flexibility Act, 5 U.S.C. 605(b), the NRC hereby certifies that this rule will not have a significant economic impact upon a substantial number of small entities.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of Title 5 of the United States Code, the following amendments to 10 CFR Part 50 are published as a document subject to codification.

49 FR 10657
Published 3/22/84

10 CFR Part 50

Codes and Standards for Nuclear Power Plants

Correction

In FR Doc. 84–6953 beginning on page 9711 of the issue Thursday, March 15, 1984, make the following corrections:

1. On page 9713, third column, in the first line of § 50.55a (a)(2), "System" should be "Systems".

2. On page 9714, second column, in § 50.55a (c)(4) and (c)(1), replace the parenthetical expression with "May 14, 1984".

3. On the same page, third column, in the fourth line of footnote 9 to § 50.55a, "50.349b)" should be "50.34(b)".

49 FR 19623
Published 5/9/84
Effective 5/9/84

Information Collection Requirements; Display of OMB Control Numbers

See Part 0 Statements of Consideration

49 FR 24512
Published 6/14/84
Effective 6/7/84

Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions and Related Conforming Amendments

See Part 2 Statements of Consideration

49 FR 26036
Published 6/26/84
Effective 7/26/84

10 CFR Part 50

Reduction of Risk from Anticipated Transients Without Scram (ATWS) Events for Light-Water-Cooled Nuclear Power Plants

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is amending its regulations to require improvements in the design and operation of light-water-cooled nuclear power plants to reduce the likelihood of failure of the reactor protection system to shut down the reactor (scram) following anticipated transients and to mitigate the consequences of anticipated transients without scram (ATWS) event. The final rule requires the installation of certain equipment in nuclear power plants. It also encourages the development of a reliability assurance program for the reactor trip system on a voluntary basis. This will significantly reduce the risk of nuclear power plant operation.

EFFECTIVE DATE: July 26, 1984.

FOR FURTHER INFORMATION CONTACT: David W. Pyatt, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, (301) 443–7831.

SUPPLEMENTARY INFORMATION: An anticipated transient without scram (ATWS) is an expected operational transient (such as a loss of feedwater, loss of condenser vacuum, or loss of offsite power to the reactor) which is accompanied by a failure of the reactor trip system (RTS), a part of the protection system, to shut down the reactor. The reactor trip system consists of those power sources, sensors, initiation circuits, logic matrices, bypasses, interlocks, racks, panels and control boards, and actuation and actuated devices that are required to initiate reactor shutdown; this includes circuit breakers, the control rods and control rod mechanisms. That portion of the RTS exclusive of the control rods and control rod mechanisms is here referred to as the scram system. ATWS accidents are a cause of concern because under certain postulated conditions they could lead to severe core damage and release of radioactivity to the environment. The ATWS question involves safe shutdown of the reactor during a transient, if there is a failure of the RTS. There have been precursors to an ATWS; the latest was a failure of the automatic portion of the RTS at the Salem 1 nuclear generating station on February 25, 1983. In that incident, manual shutdown was accomplished after 30 seconds, and no core damage or release of radioactivity occurred.

On November 24, 1981, the Commission invited comments on three

alternative proposed rules relating to ATWS (46 FR 57521). Each of the three alternative proposed rules had the objective of reduction of risk from ATWS and each featured a different approach to achieve that objective. One alternative (the Staff Rule) emphasized individual reactor evaluation to identify needed improvements. The second alternative (the Hendrie Rule) emphasized reliability assurance and would have also required certain hardware modifications. The third alternative, proposed by the Utility Group on ATWS in petition for rulemaking PRM 50–29, prescribed specific changes that were keyed to the type of reactor and its manufacturer.

Thirty-nine public comments were received at or close to the April 23, 1982 deadline for submission of comments. An additional comment was received on June 24, 1982. Copies of the comments may be examined in the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C. The following organizations and individuals provided comments:

1. F. I. Lewis, Philadelphia, Pennsylvania (private citizen)
2. S. L. Hiatt, Mentor, Ohio (private citizen)
3. Washington Public Power Supply System (WPPSS)
4. Standardized Nuclear Unit Power Plant System (SNUPPS)
5. South Carolina Electric and Gas Company (South Carolina)
6. General Electric Company (GE)
7. Duke Power Company (Duke)
8. Atomic Industrial Forum (AIF)
9. Detroit Edison (DE)
10. Mississippi Power and Light Company (MP&L)
11. Texas Utilities Generating Company (TUGC)
12. Commonwealth Edison Company
13. Combustion Engineering, Incorporated (CE)
14. The Utility Group on ATWS, representing 22 utilities
15. Combustion Engineering Owners Group
16. Houston Lighting and Power (HL&P)
17. Portland General Electric Company (PGEC)
18. GPU Nuclear (GPU)
19. Babcock and Wilcox Company (B&W)
20. Ebasco Services, Incorporated (Ebasco)
21. Public Service Electric and Gas Company (PSE&G)
22. Carolina Power and Light Company (CP&L), first comment
23. Stone and Webster Engineering Corporation (S&W)
24. Florida Power Corporation (FPL)
25. Gulf States Utilities Company (Gulf)
26. Duquesne Light Company
27. Wisconsin Public Service Corporation (WPSC)
28. Pacific Gas and Electric Company (PG&E)
29. Tennessee Valley Authority (TVA)
30. Pennsylvania Power and Light Company (PP&L)
31. Virginia Electric and Power Company (VEPCO)
32. Arkansas Power and Light Company (AP&L)
33. Alabama Power Company (Alabama)
34. Wisconsin Electric Power Company (WEPC)
35. Power Authority of the State of New York (PASNY)
36. Yankee Atomic Electric Company (Yankee)
37. Public Service Company of Indiana (Indiana)
38. Northeast Utilities Service Company (NUSCO)
39. Carolina Power and Light Company (CP&L), second comment
40. American Electric Power Service Corporation (received June 24, 1982)

Following are members of the Utility Group on ATWS, the petitioner in the PRM–50–29.

Arkansas Power and Light Company
Boston Edison Company
Connecticut Yankee Power Company
The Detroit Edison Company
Florida Power Corporation
Gulf States Utilities Company
Maine Yankee Atomic Power Company
Northeast Nuclear Energy Company
Pacific Gas and Electric Company
Public Service Electric and Gas Co.
Washington Public Power Supply System
Baltimore Gas and Electric Company
Commonwealth Edison Company
Consumers Power Company
Duke Power Company
Florida Power and Light Company
Long Island Lighting Company
Nebraska Public Power District
Omaha Public Power District
Pennsylvania Power and Light Company
Vermont Yankee Nuclear Power Corp.

The breakdown by preference among commenters for the three alternative proposed rule approaches is as follows:

Support "Utility Rule" (PRM–50–29)

WPPSS
DE
Commonwealth Edison
The Utility Group on ATWS
HL&P
Ebasco
PSE&G
FPL
Gulf
PP&L
Yankee

Support "Hendrie Rule" (Most support for this option is tentative with many reservations.)

South Carolina
Duquesne
CP&L, first comment (could also be considered a "No Rule" choice)
WPSC
VEPCO
S&W

Favor No Rule

SNUPPS
GE
Duke
AIF
MP&L
TUGC
CE
CE Owners Group
PGEC
GPU
B&W
PG&E
AP&L
Alabama
WEPC
Indiana
CP&L, second comment
NUSCO
American Electric

The Staff Rule option was favored by Ms. S. L. Hiatt who commented that it was the most stringent of the three proposals, but that it would be better to return to the implementation of specific hardware changes than to require evaluation models. Commenters TVA and PASNY stated a preference for "Alternative 2A" of NUREG-0460[1], Vol. 4, which is very similar to the Utility Rule. The comments from Mr. M I. Lewis did not favor any of the alternatives, but he pointed out limitations of both NRC-proposed rules (limitations of modeling) and felt that the Commission was not fully addressing ATWS.

Most of the utility commenters preferred that the Commission promulgate no rule on ATWS. However, many commenters chose either the Utility Rule or the Hendrie Rule as the more favorable of the alternatives presented (including some commenters within the Utility Group). The No Rule category described above includes those who felt that the risks from ATWS are already sufficiently low, plus those who recommended combining the ATWS rulemaking with other Commission activities such as the Severe Accident Program or the development of a Safety Goal.

The comments provided by the Utility Group on ATWS consisted of a three volume technical report which includes a review and evaluation of past NRC and industry studies, a generic but substantial probabilistic risk assessment of the issue for each NSSS vendor, and a value-impact analysis of all three proposed rules. The conclusions are:

1. The Staff and Hendrie Rules fail the value-impact test.

2. Only the Utility Rule is consistent with current NRC policies.

3. The record and notice for the Staff and Hendrie Rules are inadequate.

In order to resolve the ATWS rule issue, it was necessary for the NRC staff to evaluate the Utility Group report. This was done by a technical assistance contract.

A report which provided a critique of the Utility Group comments was prepared by Energy Incorporated

[1] A free single copy of NUREG–0460, Vol. 4, to the extent of supply, may be requested for public comment by writing to the Publication Services Section, Document Management Branch, Division of Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

through Sandia National Laboratories and may be examined at the Commission's Public Document Room (PDR) at 1717 H Street, Washington, D.C. Also, a summary of 39 public comments, as well as a plan to resolve the ATWS rule, is available in SECY-82-275 at the PDR.

As proposed in SECY-82-275 and the Commission briefing on July 13, 1982, a Task Force and Steering Group of NRC personnel from several offices was formed to consider the following alternatives:

1. Promulgation of no ATWS rule or including ATWS under the Severe Accident Program;
2. Adoption of the proposed or a modified version of the Utility Group Rule (PRM-50-29);
3. Adoption of the Staff Rule or a modification of it; or
4. Adoption of those portions of the Hendrie Rule for which there exists a technical basis.

The Commission has given careful consideration to all the comments and is now publishing a final rule. This final rule uses in part the same approach that is used in the Utility Group's petition for rulemaking. Prescribed changes, keyed to the reactor's type and manufacturer, are set out in the final rule. The costs and values of these changes and of other considered changes are discussed in a document on file in the Commission's Public Document Room, entitled "Recommendations of the ATWS Task Force."

Summary of Staff, Hendrie, and Utility Rules

The Staff Rule (46 FR 57521) would have resolved ATWS by establishing performance criteria (e.g., there would be analyses to verify that Service Level C of the ASME Boiler and Pressure Vessel Code would not be exceeded, fuel integrity would be maintained, there would be no excessive radioactivity release, the containment would not fail, and long-term shutdown and cooling would be assured). The Hendrie Rule (46 FR 57521), while using much of the same information base as the Staff Rule, proposed to resolve ATWS by establishing a reliability assurance program for systems that prevent or mitigate ATWS accidents and prescribing certain hardware modifications which would allow for: (1) Automatically tripping recirculation pump of a BWR under conditions indicative of an ATWS; (2) automatically actuating the standby liquid control system (SLCS) for BWRs; (3) providing a reliable scram discharge volume for BWRs; (4) providing for the prompt, automatic initiation of the auxiliary feedwater system for conditions indicative of an ATWS; and (5) assuring that the instruments necessary for the diagnosis of and recovery from ATWS accident sequences will not be disabled. Finally, the Utility Rule proposed specific design modifications for each reactor manufacturer. It contained proposals that: (a) all Westinghouse reactors have initiation of the auxiliary feedwater system and turbine trip diverse from the reactor protection system; (b) all Combustion Engineering and Babcock and Wilcox reactors have diverse initiation of auxiliary feedwater and turbine trip (similar to Westinghouse) and a diverse scram system; and (c) existing boiling water reactors manufactured by General Electric have (1) a means to trip the recirculation pumps upon receipt of a signal indicative of an ATWS, (2) a diverse scram system, and (3) a modification of the scram discharge volume. Also, new (three years after the rule becomes effective) General Electric plants would have a standby liquid control system increased to 86 gpm and all reactor licensees would institute training for operators.

Basis for Final Rule as Promulgated by the Commission

The vast majority of the commenters felt that the approach of the Staff Rule was too open-ended in terms of costs to resolve ATWS (e.g., the analyses could be very costly and time consuming). The Hendrie Rule was found difficult to interpret by most commenters. The ATWS Steering Group opted to evaluate generic plants, in a fashion similar to the Utility Group approach, and define the various fixes and estimate the reduction in probability for ATWS sequences as each additional requirement was added. This would then give a value (reduction in risk) that could be compared to the impact (cost in dollars) of each incremental requirement. There are large uncertainties in these analyses, and the detailed results of the analyses can be found in the report entitled "Recommendations of the ATWS Task Force" (discussed above). A brief discussion of the final rule's provisions, including value/impact evaluations, is given next:

Diverse and Independent Auxiliary Feedwater Initiation and Turbine Trip for PWRs: § 50.62(c)(1)

This was proposed by the Utility Group on ATWS. It consists of equipment to trip the turbine and initiate auxiliary feedwater independent of the reactor trip system. It has the acronym AMSAC, which stands for *A*uxiliary (or *A*TWS) *M*itigating *S*ystems *A*ctuation *C*ircuitry. It has a highly favorable value/impact for Westinghouse plants[2] and a marginally favorable value/impact for Combustion Engineering and Babcock and Wilcox plants. Since it has the potential for a spurious trip of the reactor which reduces its value/impact, it should be designed to minimize these trips.

Diverse Scram System: 50.62 (c)(2) and (c)(3)

This was proposed by the Utility Group on ATWS for General Electric, Combustion Engineering, and Babcock and Wilcox plants. It has a favorable value/impact from the Staff's analysis. However, the principal reasons for requiring the feature are to assure emphasis on accident prevention and to obtain the resultant decrease in potential common cause failure paths in the trip system. It also has the potential for a spurious trip of the reactor; therefore, it should be designed to minimize spurious trips. For General Electric plants, installation may extend by one or two days the downtime during a refueling outage.

A diverse scram system for Westinghouse plants was not a recommendation of the Utility Group on ATWS and was not a clear requirement of the Staff Rule or the Hendrie Rule, although the Utility Group on ATWS interpreted the Staff Rule to include it. The system does, however, have a marginally favorable value/impact for Westinghouse plants, assures emphasis on accident prevention, and results in a minimization of the potential for common cause failure paths. To assure full opportunity for public comment, the requirement for a diverse scram system for Westinghouse plants will be published separately as a proposed rule.

Increased Standby Liquid Control System (SLCS): § 50.62(c)(4)

The SLCS is a system for injecting borated water into the reactor primary coolant system. The neutron absorption by the boron causes shutdown of the reactor. Addition of this system was proposed by the Utility Group on ATWS for new plants (those receiving an operating license three years after the effective date of the final rule). The Commission believes that, with the use of the Emergency Procedure Guidelines proposed by the BWR Owners Group and General Electric that are being implemented at operating BWRs, increasing the SLCS capacity for operating plants may insure an intact containment for isolation transients, although there is uncertainty in containment failure modes. Because of the vulnerability of BWR containments to ATWS sequences, the Commission has determined that this enhanced mitigation feature is warranted. The high pressure portion of the ECCS of BWR/5 and BWR/6 licensees (HPSC) is injected into spray spargers in the core exit plenum. For these plants, the

[2] The installation of a diverse scram system significantly affects the value/impact of AMSAC.

preferred location for the injection of the borated water from the SLCS is the HPCS line just external to the reactor vessel instead of the standpipe at the core inlet plenum. A similar location is preferred for those BWR/4 licensees with HPCI injection into spargers in the core exit plenum. This injection location provides significant improvement in mixing of the borated water, particularly under low vessel water level conditions such as encountered when the EPGs are followed. This injection location is also preferred, since it could prevent local power increases and possible power excursions during the recovery phase of an ATWS when cold unborated ECCS water could be added above the core. Some BWR/5 and BWR/6 licensees already have this injection location and have designed the SLCS accordingly.

Automatic Recirculation Pump Trip for BWRs: § 50.62(c)(5)

Recirculation pump trip (RPT) was proposed as a rule requirement by the Utility Group on ATWS. This safety feature will result in a reduction of reactor power from 100 percent to about 30 percent following a transient (and failure to scram) within a minute or so. This proposed requirement has already been implemented on all operational BWRs in response to a show cause order dated February 21, 1980. The BWR owners generally agree that this is a necessary requirement, and it is being included in the final rule for completeness.

Automatic Initiation of Standby Liquid Control System

One of the alternatives considered by the Task Force was an automatically initiated standby liquid control system with a capacity of greater than 86 gpm (such as 150–200 gpm). This would have resulted in a considerable risk reduction (about a factor of seven) after the ARI is installed for operating plants. Unfortunately, the cost to do this (based on information supplied by the Utility Group on ATWS) is on the order of $24 million per plant and is significantly impacted by the costs of downtime from an inadvertent trip which would inject boron into the reactor water and by the costs of downtime for installation in existing plants. The value/impact does not favor this alternative for existing plants.

New plants (those which will receive construction permits after the effective date of this rule) will be required to have equipment for automatic initiation of the SLCS. Most of those plants already have been designed for this feature. Also, other plants that have been designed and built to include this feature must utilize the feature. The equipment for automatic SLCS actuation should be designed to perform its function in a reliable manner and to provide high reliability against spurious actuation.

Adding Extra Safety Valves or Burnable Poisons

One of the alternatives considered by the Task Force was adding more safety valves to plants manufactured by Combustion Engineering (CE) and Babcock and Wilcox (B&W). This would reduce the peak pressure in the reactor vessel and yield a higher probability of the plant surviving an ATWS with no core damage. The peak overpressure could also be reduced by modifying the core behavior (the fraction of the time the moderator temperature coefficient is unfavorable) by adding burnable poisons. The Utility Group on ATWS estimated that installing larger valve capacity could cost up to $10 million per plant. A large fraction of this cost is the downtime for installation of the valves. While the probability of ATWS can be reduced about a factor of three or more, the value/impact is unfavorable for this alternative for existing plants. These plants all have large dry containments and will be most able to mitigate the radiological consequences from an ATWS. This rule does not cover enhanced pressure relief capacity for new CE and B&W plants. However, the Commission expects that this issue would be addressed during the NRC's design review of any specific new plant or standard plant application.

Need for all Control Rods to be Inserted for PWRs

By using soluble boron for burnup and xenon control, PWRs normally operate at or near 100 percent power with control rods nearly out (except for some Babcock and Wilcox "rodded" reactors which keep one bank inserted for xenon control). Thus, nearly all rods are available to participate in a scram.

Insertion of only about 20 percent (approximately 10) of the control rods is needed to achieve hot, zero power provided that the inserted rods are suitably uniformly distributed. What is important is the uniform spacing of the rods. In installing a diverse scram system, the licensee can allow for partial scram failures if it is demonstrated that the rod insertion pattern is sufficiently uniformly spaced such that a hot, zero power is achieved.

Considerations Regarding Reliability Assurance

As a result of the failure of the Salem Unit 1 reactor to scram automatically on February 25, 1983, the NRC conducted an investigation of the events (see NUREG–0977, "NRC Fact-finding Task Force Report on the ATWS Events at Salem Nuclear Generating Station, Unit 1, on February 25, 1983" [3]). One of the principal findings was the lack of adequate attention being paid to the reliability of the reactor trip system. The Salem Generic Issues Task Force recommended to the Commission that a reliability assurance program be included in the final ATWS rule (NUREG–1000, Volume 1, "Generic Implications of ATWS Events at the Salem Nuclear Power Plant" [3]). While this rule does not require such a program, the Commission urges the voluntary development of a reliability assurance program for the RTS.

The reliability assurance program should have the following elements:

1. An analysis of the challenges to and failure modes of the RTS system, considering independent failures quantitatively and common cause failures qualitatively. An estimate of the challenge rate and the reliability of the RTS should be a part of the analysis.
2. A numerical performance standard for the RTS challenges and the RTS unavailability to use as an aid in the initial and continuing evaluation of the adequacy of the system.
3. A process of evaluating plant-specific and industry-wide operating experience to provide feedback to assess whether the RTS is performing reliably enough.
4. Procedures within quality assurance programs to ensure that the RTS performs satisfactorily in service from a reliability perspective. The frequency of challenges to the RTS should be as low as practicable.

A pivotal aspect of the ATWS issue is the reliability of the reactor trip system (RTS), including the control rods, and the difficulty associated with assessing the impact of common cause failures on the availability of the system to function when required. All RTS systems are designed for high availability, yet ATWS precursors at Kahl and Browns Ferry 3, and the ATWS event at Salem 1 did occur and were the result of common cause failures of the RTS. The Kahl and Brown Ferry 3, incidents were described in the Federal Register notice containing the proposed rules which was published on November 24, 1981 (46 FR 57521). The Salem 1 incident occurred after the proposed rules were published.

An analysis of the RTS should be performed using existing methodologies for quantitative evaluation of system reliability (e.g., unavailability). A fault tree and qualitative common cause failure analysis should be performed to identify the potential important faults of

[3] Copies of NUREG–0977 and 1000 may be purchased by calling (301) 492–9530 or by writing to the Publication Services Section, Document Management Branch, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555; or purchased from the National Technical Information Service, Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

the RTS. Examples of quantitative analysis for the RTS are: WASH–1400 (the Reactor Safety Study) [4], the Indian Point Probabilistic Safety Study [5], the Zion Probabilistic Safety Study [5], and other probabilistic safety studies performed by Industry at their own initiative or at the request of the Commission. There are an estimated 15–20 probabilistic studies of plants that have been performed or are being performed, although some of these do not include detailed RTS analyses.

Additional methodological guidance is given in the PRA Procedures Guide, NUREG/CR–2300 [6], January 1983. This Guide was developed jointly by the Commission, the American Nuclear Society and the Institute of Electrical and Electronic Engineers.

Each licensee should establish a goal or benchmark to assess the performance of the trip system. The Commission and the industry have had considerable disagreement about the "correct" or "appropriate" value of RTS unavailability. It would be more fruitful for each licensee to have a benchmark for comparison as the plant operates and generates new data. The treatment of common cause failures will be analyzed in a qualitative fashion to determine if there are any significant failure modes previously unidentified. The cost of doing this can be minimized by forming or using existing owners groups, since there is much commonality in RTS designs.

Each licensee, as part of the RTS unavailability analysis, should examine its maintenance, surveillance, and testing requirements. The testing frequency would be examined to determine if testing is done too often or not often enough. The type of testing, e.g., completeness and sequencing of component verification for operability, would be throughly reviewed. The nature and frequency of maintenance, e.g., lubrication, cleaning, calibration, dimensional verification, physical movement, would be reviewed. Recordkeeping procedures should be reviewed.

The Commission believes that a reliability assurance program for the reactor trip systems should be developed and implemented, with clear objective of providing additional assurance that the desired high reliability of the RTS is indeed achieved and maintained. Operating experience in the United States appears to demonstrate, in some instances, that implementation of Appendix A (particularly General Design Criterion 21) and Appendix B to 10 CFR Part 50, and other NRC regulatory requirements may not have yielded the degree of reliability that is possible to achieve with available technology in a cost-effective manner. One reason for this failure might be that a reliability standard has not been sufficiently developed nor quantitatively set down in procedures. Another reason might be a failure to understand fully the dominant role played by common cause failures.

The techniques for a reliabilty assurance program are in existence. They have been applied in an orderly, structured fashion in defense and aerospace applications since at least the 1960s. However, details of its application to a commercial nuclear power plant have not been worked out. Therefore, it is strongly recommended that the development of a voluntary reliability assurance program, limited to the reactor trip system, be performed jointly by the NRC and Industry, appropriately coordinated with INPO, EPRI, and the various owners groups. If this program is not voluntarily implemented in an effective manner, the Commission will reconsider the question of rulemaking in this area.

The development of industry programs on a voluntary basis has precedence in the evaluation of operating data for commercial nuclear power plants. The industry has developed the Nuclear Plant Reliability Data (NPRD) System as a voluntary program for the reporting of reliability data. The NPRD system is now undergoing a program of substantial improvement under INPO direction with close NRC interest. Even while such improvement is underway, the NPRD system is a valuable element of a reliabiiity assurance program.

Challenges to Safety Systems

This rule concerns itself with mitigating systems which are intended to reduce the challenge to plant safety systems due to a low probability ATWS event. However, the Commission has concluded that a reduction in the frequency of challenges to plant safety systems should be a prime goal of each licensee, and the Commission believes that ATWS risk reductions can also be achieved by reducing the much larger frequency of transients which call for the reactor protection system to operate. Challenges to the reactor protection system may arise from such things as: Unreliable components, inadequate post-trip reviews, testing, and tolerance of inadequate or degraded control systems. Operating experience in Japan indicates a transient frequency that is substantially less that in the United States. Utilities have categorized transients for over ten years but have not specifically instituted a program to reduce them. While not specifically required by this rule, the Commission urges licensees to analyze challenges to the plant safety systems, particularly the reactor trip system, so as to determined where improvements can be made.

Considerations Regarding System and Equipment Criteria

The Commission place a high premium on hardware, operating practices and maintenance practices which will reduce the frequency of challenges to plant safety systems. Therefore equipment required by this rule should be of sufficient quality and reliability so as to perform its intended function while at the same time minimizing the potential for transients, e.g., inadevertent scrams, which challenge other safety systems.

The additional equipment required by this amendment to implement diversity for auxiliary feedwater system initiation, turbine trip, recirculation pump trip, and reactor trip, while required to be reliable, will not have to meet all of the stringent requirements normally applied to safety-related equipment. The equipment required by this amendment is for the purpose of reducing the probability of unacceptable consequences following anticipated operational occurrences. Since the combination of an anticipated operational occurrence, failure of the existing reactor trip system, and a seismic event or an event which results in significant plant physical damage has a low probability, seismic qualification and physical separation criteria need not be applied to the equipment required by this rule. In view of the redundancy provided in existing reactor trip systems, the equipment required by this amendment does not have to be redundant within itself.

The amendment is to require diversity to those portions of existing reactor trip systems, where only minimal diversity is currently provided. The logic circuits and actuation devices (e.g., circuit breakers on pressurized water reactors) in existing reactor trip systems utilize redundant, but in general identical, components and thus are subject to potential common cause failures. Existing reactor trip systems, however, measure a variety of plant parameters and utilize a variety of sensor types. Common cause failures in the diverse sensors of existing reactor trip systems are considered sufficiently unlikely that

[4] Microfiche copies are available for purchase from the Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

[5] These may be examined at the NRC Public Document Room, 1717 H Street, NW., Washington, D.C. 20555.

[6] Copies of this NUREG may be purchased by calling (301) 492–9530 or by writing to the Publication Services Section, Document Management Branch, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555; or purchased from the National Technical Information Service, Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

additional sensor diversity is not necessary. Even though sensor diversity is not necessary, it is desirable that sensors in the existing reactor trip system not be used to provide the signals for the diverse equipment required by this amendment. Use of the same sensor for the existing reactor trip system and the diverse equipment would result in interconnections between the two systems that are difficult to analyze and which could increase the potential for common cause failures affecting both systems. Since the sensors for the equipment required by this amendment do not have to be safety related, there should be considerable flexibility for using existing sensors without using reactor trip system sensors. However, there may be some cases where the use of less than safety-related sensors would result in increased risk from frequent safety system challenges or where it would not be cost effective to use sensors separate from those in the existing reactor trip system. This is particularly the case where not using sensors in the existing reactor trip system would result in the need to install a new sensor connected to the reactor coolant system. This could result in significant radiation does to personnel making the modifications. Another case would be where installation of additional containment penetrations would be required. In cases where existing protection system sensors are used to provide signals to the diverse equipment, particular emphasis should be placed on the design of the method used to isolate the signal from the existing protection system to minimize the potential for adverse electrical interactions.

The equipment required by this amendment must be implemented such that it does not degrade the existing protection system. This is to be accomplished by making the diverse equipment electrically independent to the extent practicable from the existing protection system and by insuring that the existing protection system will continue to meet all applicable safety-related criteria after installation of the diverse equipment.

The following table illustrates the system specifications that the staff would find acceptable for the diverse scram and mitigating systems. The staff will publish this guidance in a Regulatory Guide or Standard Review Plan revision which will also cover testing, maintenance, and surveillance. Additionally, the staff will issue explicit QA guidance for the non-safety related equipment in the form of a generic letter. The generic letter will specify which requirements of the following sections of Appendix B are to be applied to non-safety related equipment: (1) Instructions, procedures, and drawings. (2) document control. (3) inspection. (4) test control. (5) control of measuring and testing equipment. (6) inspection, test, and operating status. (7) corrective action, and (8) quality assurance records.

Exemptions

Some of the older operating nuclear power plants (e.g., those licensed to operate prior to August 22, 1969) may be granted an exemption from these amendments if they can demonstrate that their risk from ATWS is sufficiently low. Factors important to this demonstration could be power level, unique design features that could prevent or mitigate the consequences of an ATWS, remaining plant lifetime, or remote siting.

GUIDANCE REGARDING SYSTEM AND EQUIPMENT SPECIFICATIONS

Guidance \ System	Diverse Reactor Trip System	Mitigating Systems (Recirculation Pump Trip and Automatic SLCS actuation for BWRs: Auxiliary Feedwater Actuation and Turbine Trip for PWRs)*
Safety Related (IEEE-279)	Not required, but the implementation must be such that the existing protection system continues to meet all applicable safety related criteria.	Not required, but the implementation must be such that the existing protection system continues to meet all applicable safety related criteria.
Redundancy	Not required.	Not required.
Diversity from existing Reactor Trip System	Equipment diversity to the extent reasonable and practicable to minimize the potential for common cause failures is required from the sensors to and including the components used to interrupt control rod power or vent the scram air header. Circuit breakers from different manufacturers alone is not sufficient to provide the required diversity for interruption of control rod power. The sensors need not be of a diverse design or manufacturer. Existing protection system instrument-sensing lines may be used. Sensors and instruments-sensing lines should be selected such that adverse interactions with existing control systems are avoided.	Equipment diversity to the extent reasonable and practicable to minimize the potential for common cause failures is required from the sensors to, but not including, the final actuation device--e.g., existing circuit breakers may be used for auxiliary feedwater initiation. The sensors need not be of a diverse design or manufacturer. Existing protection system instrument-sensing lines may by used. Sensors and instrument-sensing lines should be selected such that adverse interactions with existing control systems are avoided.
Electrical Independence from existing Reactor Trip System	Required from sensor output to the final actuation device at which point non-safety related circuits must be isolated from safety related circuits.	Required from sensor output to the final actuation device at which point non-safety related circuits must be isolated from safety related circuits.

* Existing recirculation pump trip equipment installed in BWRs in accordance with previous staff requirements for the mitigation of anticipated transients without scram need not be modified.

System / Guidance	Diverse Reactor Trip System	Mitigating Systems (Recirculation Pump Trip and Automatic SLCS actuation for BWRs: Auxiliary Feedwater Actuation and Turbine Trip for PWRs)*
Physical Separation from existing Reactor Trip System	Not required, unless redundant divisions and channels in the existing reactor trip system are not physically separated. The implementation must be such that separation criteria applied to the existing protection system are not violated.	Not required, unless redundant divisions and channels in the existing reactor trip system are not physically separated. The implementation must be such that separation criteria applied to the existing protection system are not violated.
Environmental Qualification	For anticipated operational occurrences only, not for accidents.	For anticipated operational occurrences only, not for accidents.
Seismic Qualification	Not required.	Not required.
Quality Assurance for Test, Maintenance, and Surveillance	Explicit guidance will be issued in a letter.	Explicit guidance will be issued in a letter.
Safety-Related (1E) Power Supply	Not required, but must be capable of performing safety functions with loss of offsite power. Logic and actuation device power must be from an instrument power supply independent from the power supplies for the existing reactor trip system. Existing RTS sensor and instrument channel power supplies may be used provided the possibility of common mode failure is prevented.	Not required, but must be capable of performing safety functions with loss of offsite power. Logic power must be from an instrument power supply independent from the power supplies for the existing reactor trip system. Existing RTS sensor and instrument channel power supplies may be used provided the possibility of common mode failure is prevented.
Testability at Power	Required.	Required.
Inadvertent Actuation	The design should be such that the frequency of inadvertent reactor trips and challenges to other safety systems is minimized.	The design should be such that the frequency of inadvertent actuation and challenges to other safety systems is minimized.

With the promulgation of this final ATWS rule, the Commission has completed action on PRM–50–29. The petitioner's requests have been granted in part through the incorporation of requirements into the final rule which address the following issues: (1) (For GE BWRs) (a) recirculation pump trip following an event indicative of an ATWS, and (b) independent, redundant and diverse electrical initiation of scram following an event indicative of an ATWS; (2) (For CE and B&W PWRs) automatic initiation of auxiliary feedwater independent of the reactor protection system; and (3) (For Westinghouse PWRs) automatic initiation of turbine trip and auxiliary feedwater independent of the reactor protection system. The petitioner's request for promulgation of specific provisions *within the context of an ATWS rulemaking* for the following systems are hereby denied: (1) (For GE BWRs) a scram discharge volume system [this provision was not included in the final ATWS rule because licensees already have installed or are installing this system]; and (2) (For CE and B&W PWRs) an alternate means to shut down the reactor that is diverse from and redundant to the electrical portion of the reactor protection system *up to but not including* the *trip breakers* [the final ATWS rule includes a requirement for the installation of an alternate shut-down system which *must include* the trip breakers].

Additional View of Commissioner Asselstine

While I approve this rule, I would have required automation of the Standby Liquid Control System (SLCS) for all boiling water reactors. In addition, while I approve the elements of the final rule dealing with future reactors, I am not satisfied that sufficient attention has been given to future reactors. It appears that significant additional reductions in the ATWS risk can be achieved without incurring insurmountable economic costs if such measures are considered during the design phase. I believe this rule should not be taken as a barrier to further consideration of measures for future reactors that can reduce ATWS risk below that achieved by this rule.

Additional Views of Commissioner Roberts

In addition to specifying measures to reduce the risk from ATWS events, the Statement of Considerations which accompanies this rule directs licensees to "volunteer" to implement a reliability assurance program for the Reactor Trip System.

The Reactor Trip System is one of the most important safety systems at commercial nuclear power plants. However, it is only one of many safety-related systems which must be closely monitored and carefully maintained to ensure a plant's safety and reliability. It is my view that a more logical approach to reliability assurance would be to consider such a program embracing those several safety systems which experience and analyses show could be significantly improved by such a program. This program should be reviewed separately from the ATWS rulemaking effort.

Furthermore, the Commission should not call upon the industry to implement complicated and costly reliability assurance programs until it more thoroughly analyzes the concept and until it provides specific guidance.

Regulatory Analysis

The Commission has prepared a regulatory analysis for this regulation. The analysis examines the costs and benefits of the rule as considered by the Commission. A copy of the regulatory analysis is available for inspection and copying for a fee at the NRC Public Document Room, 1717 H Street, NW., Washington, D.C. Single copies of the analysis may be obtained from David W. Pyatt, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 443–7631.

Paperwork Reduction Act Statement

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et. seq.). These requirements were approved by the Office of Management and Budget approval number 3150–0011.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that the rule will not have a significant economic impact on a substantial number of small entities. This rule affects only licensees that own and operate nuclear utilization facilities licensed under sections 103 and 104 of the Atomic Energy Act of 1954, as amended. These licensees do not fall within the definition of small businesses set forth in section 3 of the Small Business Act, 15 U.S.C. 632, or within the Small Business Size Standards set forth in 13 CFR Part 121.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Intergovernmental relations, Incorporation by reference, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, and Reporting and recordkeeping requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendment to 10 CFR Part 50 is published as a document subject to codification.

≫49 FR 27733
Published 7/6/84
Effective 8/6/84

10 CFR Part 50

Emergency Planning and Preparedness

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is amending its regulations to relax the frequency of participation by State and local governmental authorities in emergency preparedness exercises at nuclear power reactor sites. This relaxation reflects experience gained in observing and evaluating over 150 emergency preparedness exercises since 1980.

EFFECTIVE DATE: August 6, 1984.

FOR FURTHER INFORMATION CONTACT: Michael T. Jamgochian, Accident Source Term Program Office, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 443–7615.

SUPPLEMENTARY INFORMATION: On July 21, 1983, the Commission published in the **Federal Register** a proposed rule relating to emergency preparedness exercises (48 FR 33307). The proposed rule retained the presently required annual, full-participation exercise with a proviso that, if all major elements in the emergency plan are performed in a satisfactory manner during the annual exercise, FEMA may recommend and the NRC may find that another exercise with State and local government participation is not required for up to 2 years. The proposed rule did not relax in any manner the annual requirement for onsite exercises that each licensee is required to conduct which include exercising the control room, technical support center, and emergency operation facility functions.

Immediately after the Commission approved publication of the proposed rule, the Director of FEMA wrote to NRC Chairman Palladino, urging the Commission to "* * * adopt biennial exercise frequency language * * *" in 10 CFR Part 50, Appendix E to assure consistency in the regulations.

FEMA's final regulation, 44 CFR 350, published in the **Federal Register** on September 28, 1983 (48 FR 44332), reduced State and local participation in emergency preparedness exercises to a frequency of once every 2 years. The FEMA final rule is not consistent with the position taken by the Commission in the NRC proposed rule (an annual frequency with a specific NRC finding necessary for relaxation). This difference was a source of some concern to both agencies and to some of the commenters on the NRC proposed rule. The FEMA regulation requires that a State within the plume exposure pathway EPZ fully participate in an exercise every 2 years with no requirement on the return frequency at a specific site. Typically, therefore, a State with two sites might be expected to fully participate in an exercise at a specific site at least every 4 years, a State with three sites, every 6 years; four sites, every 8 years; five sites, every 10 years, etc. Whereas, the enclosed NRC rule change stipulates that a State within the plume exposure pathway EPZ fully participate in an exercise every 2 years with a return frequency of at least once every 7 years at a specific site. Both rules require a multi-site State, when not fully participating in an exercise at a specific site, to partially participate every 2 years at that specific site in order to support the participation of the appropriate local governments.

The Commission has selected a return frequency of 7 years because presently no State has more than 7 operating and/or planned reactors and States with that number of sites or less would not be required to exercise in a full participation mode more often than about once a year.

Public Comments

The NRC proposed rule was published in the **Federal Register** with a 60-day comment period on July 21, 1983 (48 FR 33307). Seventy-one comment letters were received and evaluated by the NRC staff.

Those commenters (55) favoring relaxing the frequency of State and local governmental participation in emergency preparedness exercises were utilities, consulting firms representing utilities, two State Governors, State and local governmental agencies, FEMA and private citizens.

Those commenters (14) opposing relaxing the frequency of State and local governmental participation in emergency preparedness exercises were an information service, environmental groups, a State Governor, State and local governmental agencies, EPA and private citizens.

The comments raised several significant issues, to which the Commission responds as follows:

Issue No. 1

Should the Commission adopt a biennial exercise frequency for State and local government participation with a proviso for remedial exercises for the correction of serious deficiencies rather than the exercise frequency contained in the proposed rule?

Discussion: This issue was addressed by many State and local governmental comment letters whose concerns are generaly characterized by the following quote from the FEMA comment letter:

> The NRC proposal will be difficult to administer. For example, objective criteria will need to be developed for use in determining whether State and local governments have performed in a satisfactory enough manner to warrant an exemption from the succeeding year's exercise. It will be difficult to apply such criteria to the satisfaction of State and local governments. The NRC proposal would create complex situations such as what to do if some jurisdictions perform in an unsatisfactory manner and the others in a satisfactory manner. Would all jurisdictions have to exercise the next year or only the unsatisfactory ones? If only the unsatisfactory ones, an unworkable condition would result wherein some jurisdictions would be on annual and others on biennial frequency. Inequities would result. Further, the time involved for evaluating exercise results, including getting commitments from State and local governments to take corrective actions, has proved time consuming in the past. If we add time for the NRC to make a finding after FEMA's recommendation, a good portion of a year could be consumed. This would cause uncertainty and instability in State and local governments, which should be avoided.

Commission Response: The Commission recognizes the implementation difficulties with the proposed NRC approach (annual frequency with a finding to relax). This was pointed out by the NRC emergency preparedness regional inspectors, a majority of the comment letters, the general thrust in two petitions for rulemaking,[1] and the ACRS.

Issue No. 2

Will less frequent exercises result in making personnel and equipment less effective or reliable and therefore reduce the level of safety?

Discussion: A few commenters, primarily citizens and governmental organizations, addressed this issue by pointing out that State and local emergency response organizations must frequently respond to various natural and man-made emergencies. This continuum of real life emergencies exercises personnel, equipment, communication networks and organizational structures on a frequent basis.

The following quote from a comment letter summarizes this concern:

> While an emergency situation at a nuclear power plant may call for some procedures that are different from those used under other emergency situations, many of the response and evacuation measures will be similar, if not identical. A myriad of major and minor emergencies demand the maintenance of a force of personnel trained in these procedures. By responding to other emergency situations such as chemical spills, the emergency response personnel will be rehearsing many of the procedures they would use in the event of an emergency situation at a nuclear power plant. Some examples of these procedures would include notification of appropriate local authorities, establishing communication links between local, regional and state emergency response personnel, and evacuating or finding shelter for the affected population.

Commission Response: Because emergency response personnel at the State and local government level continuously respond to actual emergencies, the Commission does not consider that relaxing the frequency of State and local government participation in emergency preparedness exercises would adversely affect the health and safety of the public.

A provision has been added in the final rule to permit State or local government participation in the licensee's annual exercise. A State or local government may consider its response capability to be less than optimal because of an unusually large personnel turnover or because there have been limited responses to real emergencies in the community. The final rule requires the licensee to provide for State or local government participation if they indicate such a desire.

Issue No. 3

Will the deletion of NUREG–0654[2] as a footnote adversely affect the interface between offsite emergency plans and the licensee's emergency plans?

Discussion: The proposed rule included a provision to delete references

[1] On March 17, 1982, the Commission received a petition for rulemaking (PRM–50–33) from National Emergency Management Association. On August 30, 1982, the Commission received a petition for rulemaking (PRM–50–34) from the Adjutant General of the State of South Carolina. The general thrust of both petitions urged the relaxation of the frequency of emergency preparedness exercises.

[2] Copies of these documents are available at the Commission's Public Document Room, 1717 H Street, NW., Washington, D.C. 20555. Copies of these documents may be purchased from the Government Printing Office. Information on current prices may be obtained by writing the U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Publications Sales Manager.

to NUREG–0654 throughout the regulations. NUREG–0654 provides specific criteria for the evaluation of the standards in § 50.47 and is titled, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Plants." A few commenters, primarily a utility and a state governmental official, felt that the deletion of the NUREG–0654 footnote in the regulations would preclude its use by reviewers in determining the adequacy of emergency preparedness.

Commission Response: The delegation of a reference to NUREG–0654 will not affect its use as a guidance document for emergency planning. In the 1980 rulemaking, the Commission included this reference as a means of formally approving the use of NUREG–0654. See 45 FR 55402, 55408 (August 19, 1980). NUREG–0654 is endorsed by Regulatory Guide 1.101,[8] and will continue to be used by reviewers in evaluating the adequacy of emergency preparedness at nuclear power reactor sites.

Issue No. 4

Do adequate procedures exist for NRC and FEMA to evaluate whether major elements are performed satisfactorily during an exercise?

Discussion: Many commenters, primarily State and local governmental authorities as well as utilities, pointed out that there is a need for uniform evaluation of exercise performance.

Commission Response: The Commission concurs with the commenters. In order to provide for uniform evaluation of emergency preparedness exercises, FEMA has developed and now uses a document titled "Procedural Policy on Radiological Emergency Preparedness Plan Reviews, Exercise Observations and Evaluations and Interim Findings."[9] These procedures were forwarded to the FEMA regions for use on August 5, 1983.

Having considered all comments received, experience gained since 1980, input from emergency preparedness regional inspectors, the general thrust of two petitions for rulemaking, and ACRS comments, the Commission has concluded that the requirements for frequency of participation by State and local governmental authorities in emergency preparedness exercises around nuclear power reactors should be relaxed. The Commission therefore is promulgating a final rule which:

1. Continues to require licensees to conduct an annual onsite emergency preparedness exercise,

2. Requires that State and local governments participate in emergency preparedness exercises every 2 years with a provision for remedial exercises to assure that deficiencies are corrected,

3. Provides that at least once every 7 years, all States within the plume exposure pathway EPZ of a given site must fully participate in an offsite exercise for that site,

4. Requires licensees to provide an opportunity for State and local government participation in the licensees annual emergency preparedness exercise, and

5. Requires FEMA to determine the need for and extent of remedial exercises.*

The final rule is not totally consistent with FEMA's final regulation (44 CFR 350). This inconsistency lies in the area of return frequency for multiple-site states as previously discussed. The FEMA position on return frequency is a significant departure from the NRC's proposed regulation (48 FR 33307) dated July 21, 1983. The Commission believes that more study is needed before deletion of the return frequency requirement can be justified.

The Commission is adopting a biennial exercise frequency for State and local government participation with a proviso for remedial exercises to assure the correction of serious deficiencies. These changes to the emergency preparedness regulations are being made because:

a. Experience in observing and evaluating over 150 exercises has shown that a disproportionate amount of Federal, State and local government and licensee resources are being expended in order to conduct and evaluate annual emergency preparedness exercises. As a result of the substantial expenditure of resources for these exercises, fewer resources are available to establish and maintain the essential day-to-day upgraded state of emergency preparedness.

b. State and local governments respond to a variety of actual emergencies on a continuing basis, thus frequently exercising their emergency preparedness capabilities.

c. The flexibility provided for in a biennial frequency will be an incentive for State and local governments to perform in a satisfactory manner in order to avoid conducting remedial exercises.

And lastly, the Commission notes that FEMA has had almost 3 years of experience with evaluating State and local government radiological emergency planning and preparedness. With few exceptions, this experience has revealed a significant increase in the level of State and local government radiological preparedness as demonstrated in joint exercises. FEMA has evaluated approximately 150 exercises. In only five instances did FEMA determine that State and local governments did not demonstrate adequate preparedness. The Commission believes that this enhanced level of preparedness should be recognized by allowing State and local governments to exercise jointly with utilities on a biennial frequency.

On March 17, 1982, the Commission received a petition for rulemaking (PRM–50–33) from National Emergency Management Association. On August 30, 1982, the Commission received a petition for rulemaking (PRM–50–34) from the Adjutant General of the State of South Carolina. The petition from the National Emergency Management Association requested the NRC to relax the frequency of full participation by State and local governments in emergency preparedness exercises from annually to biennially. The petition from South Carolina requested that the NRC reduce the frequency with which local governments must participate in a full scale emergency preparedness exercise.

The promulgation of this final rule relaxes the frequency of full participation by State and local governments in emergency preparedness exercises from annually to biennially. This rule completes NRC action by granting both petitions for rulemaking.

Finding of No Significant Environmental Impact

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that this rule is not a major Federal action significantly affecting the quality of the human environment and therefore an environmental impact statement is not required. See 10 CFR 51.20(a)(1). Moreover, the Commission has determined, pursuant to 10 CFR 51.32, that the final rule has no significant environmental impact. This determination has been made because the Commission cannot identify any impact on the human environment associated with reducing the frequency of full participation of State and local governments in emergency preparedness exercises from annually to biennially.

The alternative approaches that were considered in this rulemaking proceedings were:

1. To retain the annual full participation exercise with a provision to enable relaxation to every 2 years.

2. To incorporate by reference into the NRC's regulations, the FEMA regulations governing the frequency of full participation of State and local governments in emergency preparedness exercises.

* Guidance for determining the need for, and extent of, remedial exercises is being developed.

3. To relax the frequency of full participation of State and local governments in emergency preparedness exercises from annually to biennially.

There were no environmental impacts identified from any of the alternatives considered.

Because FEMA is directly involved in the evaluation of offsite emergency preparedness exercises and is affected by the promulgation of these amendments, the NRC consulted extensively with FEMA during the development of this rule.

Paperwork Reduction Act Statement

The final rule contains no information collection requirements and therefore is not subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

Regulatory Analysis

The Commission has prepared a regulatory analysis of this regulation. The analysis examines the costs and benefits of the rule as considered by the Commission. A copy of the regulatory analysis is available for inspection and copying, for a fee, at the NRC Public Document Room, 1717 H Street NW., Washington, DC. Single copies of the analysis may be obtained from Michael T. Jamgochian, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone (301) 443–7615.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this final rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. The final rule clarifies certain elements and findings necessary for the issuance of an operating license for a nuclear power plant licensed pursuant to sections 103 and 104b of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2133, 2134b. The electric utility companies which own and operate nuclear power plants are dominant in their service areas and do not fall within the definition of a small business found in Section 3 of the Small Business Act, 15 U.S.C. 632, or within the Small Business Size Standards set forth in 13 CFR Part 121. Accordingly, there is no significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act of 1980.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 552 and 553 of Title 5 of the United States Code, notice is hereby given that the following amendment to Title 10, Chapter I, Code of Federal Regulations, Part 50 is published as a document subject to codification.

49 FR 34658
Published 8/31/84

10 CFR Parts 50 and 51

Waste Confidence Decision

AGENCY: Nuclear Regulatory Commission.

ACTION: Final Waste Confidence Decision.

SUMMARY: The Nuclear Regulatory Commission initiated a rulemaking proceeding on October 25, 1979 to assess generically the degree of assurance now available that radioactive waste can be safely disposed of, to determine when such disposal of off-site storage will be available, and to determine whether radioactive wastes can be safely stored on-site past the expiration of existing facility licenses until off-site disposal or storage is available. This proceeding became known as the "Waste Confidence Rulemaking" and was conducted partially in response to a remand by the U.S. Court of Appeals for the D.C. Circuit. *State of Minnesota* v. *NRC*, 602 F 2d 412 (1979). The Commission also stated that in the event it determined that on-site storage of spent fuel would be necessary or appropriate after the expiration of facility licenses, it would propose a rule addressing the environmental and safety implications of such storage.

The Commission's decision is summarized in the following findings:

(1) The Commission finds reasonable assurance that safe disposal of high level radioactive waste and spent fuel in a mined geologic repository is technically feasible.

(2) The Commission finds reasonable assurance that one or more mined geologic repositories for commercial high-level radioactive waste and spent fuel will be available by the years 2007–09, and that sufficient repository capacity will be available within 30 years beyond expiration of any reactor operating license to dispose of existing commercial high level radioactive waste and spent fuel originating in such reactor and generated up to that time.

(3) The Commission finds reasonable assurance that high-level radioactive waste and spent fuel will be managed in a safe manner until sufficient repository capacity is available to assure the safe disposal of all high-level radioactive waste and spent fuel.

(4) The Commission finds reasonable assurance that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 30 years beyond the expiration of that reactor's operating licenses at that reactor's spent fuel storage basin, or at either onsite or offsite independent spent fuel storage installations.

(5) The Commission finds reasonable assurance that safe independent onsite or offset spent fuel storage will be made available if such storage capacity is needed.

In keeping with its commitment to issue a rule providing procedures for considering environmental effects of extended onsite storage of spent fuel in licensing proceedings, the Commission is issuing, elsewhere in this issue, final amendments to 10 CFR Parts 50 and 51.

FOR FURTHER INFORMATION CONTACT: Dennis Rathbun or Clyde Jupiter, Office of Policy Evaluation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (202) 634–3295, or Sheldon Trubatch, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555; telephone (202) 634–3224.

The Commission's Decision

In the Matter of RULEMAKING on the Storage and Disposal of Nuclear Waste (Waste Confidence Rulemaking)

[PR–50, –51 (44 FR 61372)]

August 22, 1984.

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Decision

1.0 Introduction

1.1 Initiation of the Waste Confidence Rulemaking Proceeding

In response to the remand of the U.S. Court of Appeals for the District of Columbia Circuit (*State of Minnesota* v. NRC, 602 F.2d 412 (1979)), and as a continuation of previous proceedings conducted in this area by NRC (44 FR 61372), the Commission initiated a generic rulemaking proceeding on October 25, 1979. In its Notice of Proposed Rulemaking, the Commission stated that the "purpose of this proceeding is solely to assess generically the degree of assurance now available that radioactive waste can be safely disposed of, to determine when such disposal or off-site storage will be available, and to determine whether radioactive wastes can be safely stored on-site past the expiration of existing facility licenses until off-site disposal or storage is available." The Commission

also stated that in the event it determined that on-site storage of spent fuel would be necessary or appropriate after the expiration of facility licenses, it would propose a rule addressing the environmental and safety implications of such storage. The Commission recognized that the scope of this generic proceeding would be broader than the Court's instruction, which required the Commission to address the questions of whether off-site storage for spent fuel would be available by the expiration of reactor operating licenses and if not, whether spent fuel could continue to be safely stored on-site (44 FR 61373).

However, the Commission believed that the primary public concern was whether nuclear waste could be disposed of safely rather than with an off-site solution to the storage problem per se. Moreover, as stated in the **Federal Register** Notice of October 25, 1979, the Commission committed itself to reassess its basis for reasonable assurance that methods of safe permanent disposal of high level waste would be available when they are needed. In conducting that reassessment, the Commission noted that it would "draw upon the record compiled in the Commission's recently concluded rulemaking on the environmental impacts of the nuclear fuel cycle (44 FR 45362–45374 [August 2, 1979])" (44 FR 61373).

The Department of Energy (DOE), as the lead agency on nuclear waste management filed its statement of position (PS) on April 15, 1980. Statements of position were filed by 30 participants by June 9, 1980, and were followed by cross statements (CS) from 21 of the participants by August 11, 1980.

1.2 Establishment of the Working Group

On May 28, 1980, the Commission directed the staff to form a Working Group to advise the Commission on the adequacy of the record to be compiled in this proceeding, to review the participants' submissions and identify issues in controversy and any areas in which additional information would be needed. The Working Group submitted a report to the Commission on January 29, 1981. The report summarized the record, identified key issues and controversies, and commented on the adequacy of the record for considering the key issues. The participants were invited to submit comments on the adequacy of the Working Group's summary of the record and its identification and description of the issues. Such comments were made by 20 participants by March 5, 1981.

1.3 Commission's Order for Oral Presentations

The Commission found additional limited proceedings to be useful to allow the participants to state their basic positions directly to the Commissioners and to enable the Commissioners to discuss specific issues with them. In addition, the Commission invited comment on the following policy developments: (1) the Administration's announcement[1] of a policy favoring commercial reprocessing of spent fuel and instructing the Secretary of Energy to proceed swiftly toward deployment of a means of storing and disposing of commercial high-level radioactive waste, and (2) the submission of information to the Presiding Officer in this proceeding by DOE on March 27, 1981, concerning the DOE decision to "discontinue [its] efforts to provide federal government-owned or controlled away-from-reactor (AFR) [spent fuel] storage facilities." The participants were asked to comment on the significance to the proceeding of issues, particularly institutional concerns, resulting from these policy developments and to comment on the merits of DOE's new projection of spent fuel storage requirements and on the technical and practical feasibility of DOE's suggested alternative storage methods.

To implement the additional limited proceedings, the Commission consolidated the participants into the following identifiable groups: (a) federal government, (b) state and local participants, (c) industry, and (d) public interest groups (Second Prehearing Memorandum and Order, November 6, 1981). Prehearing statements (PHS) were provided by the consolidated groups, as well as by individual participants. The oral arguments were presented to the Commissioners on January 11, 1982.

The extensive record, comprised of all written and oral submissions provides the primary basis for the Commission's decision regarding the safe storage and disposal of spent fuel and nuclear waste. However, while the Commission was preparing this Waste Confidence decision, the Nuclear Waste Policy Act of 1982 (NWPA) was enacted. The Commission found that this Act had a significant bearing on the Commission's decision, and the Commission has considered the NWPA in reaching its conclusions. The Commission believes that the NWPA had its most significant impact in narrowing the uncertainties surrounding institutional issues. Moreover, although the NWPA is intrinsically incapable of resolving technical issues, it will establish the necessary programs, milestones, and funding mechanisms to enable their resolution in the years ahead.

The Commission's preliminary decision in the Waste Confidence proceeding was served on the consolidated participants on May 17, 1983. However, the parties to this proceeding had not yet had an opportunity to comment on what implications, if any, the NWPA had on the Commission's decision. Further, the Commission's discussion of the safety of dry storage of spent nuclear fuel, in its preliminary decision, relied substantially on material not yet in the record. Therefore, the preliminary decision was issued as a draft decision. The Commission requested the consolidated groupings of participants to comment on either or both of these issues. In addition, the Commission found that onsite storage after license expiration might be necessary or appropriate, and therefore, in accordance with its notice initiating this proceeding, it proposed a rule to establish how the environmental effects of extended onsite storage would be considered in licensing proceedings (48 FR 22730, May 20, 1983), as amendments to 10 CFR Parts 50 and 51.

Subsequently, in response to public comments on the proposed amendments to 10 CFR Part 51, the Commission reopend the comment period to address the environmental aspects of the fourth finding of the Commission's Waste Confidence decision, on which the proposed amendment to Part 51 is based (48 FR 50746, November 3, 1983). Public comments were requested on: (1) The environmental aspects of the fourth finding—that the Commission has reasonable assurance that, if necessary, spent fuel can be stored without significant environmental effects for at least 30 years beyond the expiration of reactor operating licenses at reactor spent fuel storage basins, or at either onsite or offsite independent spent fuel storage installations; (2) the determination that there are no significant non-radiological consequences which could adversely affect the environment if spent fuel is stored beyond the expiration of operating licenses either at reactors or at independent spent fuel storage installations; and (3) the implications of comments on items (1) and (2) above for the proposed amendment to 10 CFR Part 51.

After reviewing these additional comments, the Commission found no reason to modify its fourth finding or the supporting determination.

The analysis of comments, together with the Commission's response is summarized in the Addendum to the Commission's decision.

The Commission notes that two relevant developments have occurred subsequent to the closing of the record in the Waste Confidence proceeding. They are the publication of DOE's draft Mission Plan for the Civilian Radioactive Waste Management Program (April, 1984) and the Commission's concurrence in DOE's General Guidelines for Recommendation of Sites for Nuclear Waste Repositories

[1] Presidential Nuclear Policy Statement, October 9, 1981.

(July 3, 1984). These developments are a matter of public record, and in the case of the Commission's concurrence was the conclusion of a separate public proceeding. The Commission has considered the effects of these developments on its previously announced decision in this proceeding and determined that these developments do not substantially modify the Commission's previous conclusions.

The decision is summarized as five Commission findings in Section 2.0. The detailed rationale for these findings, including references to the record developed in this proceeding, is contained in the Appendix to this document. The Commission considers these five findings to be a response to the mandate of the U.S. Court of Appeals for the District of Columbia Circuit and, in addition, a generic determination that there is reasonable assurance that radioactive waste can and will be safely stored and disposed of in a timely manner.

In keeping with its commitment to issue a rule providing procedures for considering environmental effects of extended onsite storage of spent fuel in licensing proceedings, final amendments to 10 CFR Parts 50 and 51 are being issued simultaneously with this decision.

2.0 Commission Findings [2]

(1) The Commission finds reasonable assurance that safe disposal of high level radioactive waste and spent fuel in a mined geologic repository is technically feasible.

(2) The Commission finds reasonable assurance that one or more mined geologic repositories for commercial high-level radioactive waste and spent fuel will be available by the years 2007–09, and that sufficient repository capacity will be available within 30 years beyond expiration of any reactor operating license to dispose of existing commercial high level radioactive waste and spent fuel originating in such reactor and generated up to that time.

(3) The Commission finds reasonable assurance that high-level radioactive waste and spent fuel will be managed in a safe manner until sufficient repository capacity is available to assure the safe disposal of all high-level radioactive waste and spent fuel.

[2] All findings by the Commission in this proceeding are limited to the storage and disposal of high-level radioactive waste and spent fuel generated by nuclear power reactors required to be licensed under sections 103 or 104 b of the Atomic Energy Act of 1954 (42 U.S.C. 2133 and 2134(b)), and to facilities intended for such storage or disposal. The Commission's findings in this proceeding do not address the storage and disposal of high-level radioactive waste or spent fuel resulting from atomic energy defense activities, research and development activities of the Department of Energy, or both. This is consistent with the Nuclear Waste Policy Act of 1982, section 8(c).

(4) The Commission finds reasonable assurance, that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 30 years beyond the expiration of that reactor's operating license at that reactor's spent fuel storage basin, or at either onsite or offsite independent spent fuel storage installations.

(5) The Commission finds reasonable assurance that safe independent onsite or offsite spent fuel storage will be made available if such storage capacity is needed.

3.0 Future Actions by the Commission

The Commission's Waste Confidence decision is unavoidably in the nature of a prediction. While the Commission believes for the reasons set out in the decision that it can, with reasonable assurance, reach favorable conclusions of confidence, the Commission recognizes that the possibility of significant unexpected events remains open. Consequently, the Commission will review its conclusions on waste confidence should significant and pertinent unexpected events occur, or at least every 5 years until a repository for high-level radioactive waste and spent fuel is available.

.0 For Further Information Contact

Dennis Rathbun or Clyde Jupiter, Office of Policy Evaluation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (202) 634–3295, or Sheldon Trubatch, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555; telephone (202) 634–3224.

Dated at Washington, D.C. this 22nd day of August, 1984. Commissioner Zech did not participate in this action.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

Addendum to the Commission's Waste Confidence Decision

Introduction

On May 17, 1983, the Commission issued its proposed decision in the Waste Confidence proceeding, and asked the consolidated groups of participants to comment on two aspects of the decision: the implications of the Nuclear Waste Policy Act (NWPA) for the decision and the Commission's discussion of the safety of dry storage of spent nuclear fuel, which relied substantially on material not in the record. The analysis of these comments is subdivided into several issue categories and presented, with NRC's responses, in Part I below. The membership of the consolidated groups responding to the Commission's request as well as the abbreviations used to identify the groups are provided in Section 3 of Part I.

Subsequently, in response to public comments on the Commission's proposed amendment to 10 CFR Part 51 (48 FR 22730, May 20, 1983), the Commission reopened (48 FR 50746, November 3, 1983) the comment period to address the environmental aspects of the fourth finding of the Commission's proposed Waste Confidence decision on which the proposed amendment to Part 51 is based. Public comments were requested on: (1) The environmental aspects of the fourth finding—that the Commission has reasonable assurance that, if necessary, spent fuel can be stored without significant environmental effects for at least 30 years beyond the expiration of reactor operating licenses at reactor spent fuel storage basins, or at either onsite or offsite independent spent fuel storage installations; (2) the determination that there are no significant non-radiological consequences which could adversely affect the environment if spent fuel is stored beyond the expiration of operating licenses either at reactors or at independent spent fuel storage installations; and (3) the implications of comments on items (1) and (2) above for the proposed amendment to 10 CFR Part 51. The analysis of public comments and NRC's responses are presented in Part II of this document. The list of respondents to this reopened comment period and the abbreviations used to identify them are given in Section 4 of Part II.

The Commission notes that two relevant developments have occurred subsequent to the closing of the record in the Waste Confidence proceeding. They are the publication of DOE's draft Mission Plan of the Civilian Radioactive Waste Management Program (April, 1984) and the Commission's concurrence in DOE's General Guidelines for Recommendation of Sites for Nuclear Waste Repositories (July 3, 1984). These developments are a matter of public record, and in the case of the Commission's concurrence was the conclusion of a separate public proceeding. The Commission has considered the effects of these developments on its previously announced decision in this proceeding and determined that these developments do not substantially modify the Commission's previous conclusions.

Part I. Analysis of the Consolidated Groups' Comments on the Commission's Waste Confidence Decision and NRC Responses

1. Effect of the Nuclear Waste Policy Act on the Commission's Decision

A. General

(1) *Summary of Comments.* The

Consolidated Industry Group agreed with the Commission's view that the NWPA contains provisions pertinent to all of the major elements relevant to mined geologic disposal of high level radioactive wastes (Industry, p. 3). The Industry Group called attention to the comprehensive nature of the NWPA which authorizes DOE to undertake steps leading to the construction, operation and maintenance of a deep geologic test and evaluation facility; requires DOE to prepare a waste management mission plan; establishes a prescribed schedule for repository siting, construction and operation; defines the decision-making roles of affected states and Indian tribes in repository site-selection and evaluation; provides for the continuity of Federal management of the nuclear waste program and continued funding; and facilitates the establishment of an overall integrated spent fuel and waste management system. The Industry Group suggested that these features of the Act should increase the Commission's confidence that waste can and will be disposed of safely. The Group pointed out that the Act also contains special procedures to facilitate the licensing of spent fuel storage capacity expansion and transshipments; directs DOE research, development and cooperation with utilities in developing dry storage and rod compaction; and provides for federally supplied interim storage capacity to supplement that of industry (Industry, pp. 4–8).

The Industry Group believed that the NWPA's enactment—in and of itself—provides a sound basis for confidence that institutional difficulties can and will continue to be resolved. At the same time, Industry stated that the NWPA's enactment was not essential for the Commission to reach an affirmative decision in this proceeding (Industry, p. 9).

In contrast, the Consolidated Public Interest Group (CPIG) believed that the NWPA provides an insufficient basis for the Commission's decision in this proceeding with respect to the availability or timing of a nuclear waste repository. The CPIG contended that the NWPA contains many areas of ambiguity, and gave as examples:

(i) Section 114(a) of the NWPA requires DOE to make a recommendation to the President for the first repository site, accompanied by the preliminary comments by the Commission concerning the suitability of three alternative candidate sites for licensing under 10 CFR Part 60. DOE interprets this section to require such preliminary comments *before* site characterization begins * * * The Commission staff interprets that section * * * to require a judgment of suitability under 10 CFR Part 60 *after* site characterization has occurred.

(ii) DOE originally interpreted Sec. 112(f) to permit continuation of ongoing site characterization at Hanford before completion of the DOE siting guidelines. DOE now concedes that such site characterization work must await completion of an environmental assessment prepared in accordance with final DOE siting guidelines (CPIG, pp. 2–3).

(2) *NRC Response.* The Commission has considered the effect of enactment of the Nuclear Waste Policy Act of 1982 and concludes that the Act provides support for timely resolution of technical uncertainties and reduces uncertainties in the institutional arrangements for the participation of affected states and Indian tribes in the siting and development of repositories and in the long-term management, direction and funding of the repository program. The bases for the Commission's conclusion are set forth in the decision and will not be repeated here. The passage of the Act provides evidence of a strong national commitment to the solution of the radioactive waste management problem.

The Commission recognizes the possibility of differing interpretations regarding the implementation of the NWPA. With respect to CPIG's discussion of Section 114(a), the Commission is unaware of any differences between DOE and NRC in the interpretation of this section of the Act. We note that DOE's recommendation of a repository site to the President would necessarily be made after DOE's preliminary determination that three sites are suitable for development. DOE and NRC now agree that the preliminary determination of site suitability for the alternative sites should be made following site characterization (Commission's Final Decision on the U.S. Department of Energy's General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories [July 3, 1984]).

Concerning Section 112(f), DOE has continued site characterization at Hanford during formulation of the siting guidelines; in accordance with the views of the states and environmental groups, DOE has deferred drilling of the exploratory shaft pending the completion of the guidelines, submission of the site characterization plan to NRC and preparation of an environmental assessment of site characterization activities.

B. Technical Aspects

(1) *Summary of Comments.* The Consolidated Industry Group believed that the Act contained provisions pertinent to all of the major elements relevant to disposal (Industry, p. 3). The Consolidated Public Interest Group, on the other hand, contended that the NWPA did not resolve technical uncertainties concerning repository development and safety (CPIG, p. 5).

The Consolidated State Group did not believe that the NWPA supported a finding of confidence because it failed to resolve technical questions and merely set target dates for deciding on the site of the first waste repository. The State Group noted that if technical problems are not resolved by the dates proposed by Congress, the milestone dates will have to be postponed. The State Group contended too that, although the Act authorizes DOE to conduct research on unresolved technical issues, the research could uncover additional problems (States, p. 2). However, DOE pointed out that the NWPA provides for a focused, integrated and extensive research and development program for the deep geologic disposal of high-level waste and spent fuel. DOE believed that Sec. 215 of the Act enhances confidence in the timely availability of disposal facilities by authorizing a research facility to develop and demonstrate a program for waste disposal. DOE also stated that the schedule for a Test and Evaluation Facility would require the *in situ* testing described in Sec. 217 of the Act to begin not later than May 6, 1990, thus allowing for research and development results to be incorporated in the repository which is scheduled to open in 1998 (DOE, pp. 11, 12).

(2) *NRC Response.* As the record of this proceeding shows, there are no known technical problems that would make safe waste disposal impossible. Clearly, further engineering development and site-specific evaluations will be required before a repository can be constructed. The Commission did not propose to rely on the NWPA as the basis for resolving technical uncertainties. Rather, the Commission found that the NWPA provides a framework for facilitating the solution of the remaining technical issues. Title II of the Act authorizes DOE to undertake steps leading to the construction, operation and maintenance of a deep geologic test and evaluation facility and to conduct the necessary research and development as well as to establish a demonstration program. The schedule set forth in the Act is consistent with the objective of assuring repository operation within the time period discussed in the Waste Confidence decision. The "Mission Plan" which is required by the Act will provide an effective management tool for assuring that the many technical activities are properly coordinated and that results of research and development projects are available when needed.

C. Institutional Aspects

(1) *Summary of Comments.* The Consolidated State Group believed that the NWPA failed to resolve institutional questions. The States argued that their cooperation cannot be assumed in the

event that the general public in the vicinity of a proposed site is opposed to the location. Further, the States contended that, if a site is vetoed by a host state or Indian tribe, there is no assurance that Congress will vote to override the veto. Moreover, if the veto is overridden, a legal challenge is likely and the outcome is uncertain (States, p. 3).

The Consolidated Public Interest Group also believed that the NWPA has not significantly reduced institutional uncertainties regarding participation and objections of affected states and Indian tribes. As examples of institutional difficulties, CPIG pointed out that state officials and Indian tribes still have concerns regarding the adequacy of time to monitor and comment upon agency proposals, the lack of agency response to their concerns, and inadequate funding to support their full participation. Further, CPIG noted that the Act (Sec. 115) provides states and Indian tribes with strong new authority to veto the siting of a repository within their borders (CPIG, p. 5).

DOE, on the other hand, believed that Sections 116 and 117 of the NWPA will reduce Federal-state institutional uncertainties (DOE p. 9).

I(2) *NRC Response.* It would be unrealistic to expect that the NWPA will resolve all institutional issues. However, it does provide specific statutory procedures and arrangements for accomplishing such resolution. The right of affected states and Indian tribes to disapprove a site designation under the NWPA might create uncertainty in gaining the needed approvals. Nevertheless, the NWPA's establishment of a detailed process for state and tribal participation in the development of repositories and for the resolution of disputes should minimize the potential for substantial disruption of plans and schedules. The Commission does not expect that the NWPA can eliminate all disagreement about development of waste repositories. However, in providing for information exchange, financial and technical assistance to affected groups, and meaningful participation of affected states and tribes in the decision-making process, the Act should minimize the potential for direct confrontations and disputes.

D. Funding Aspects

(1) *Summary of Comments.* The Consolidated Industry Group expressed its general belief that the NWPA assures adequate funding for interim storage and disposal of radioactive waste (Industry, pp. 6, 7). Similarly, DOE believed that the funding mechanism provided by the NWPA should largely remove uncertainties in assuring adequate resources to complete the program (DOE, pp. 10, 11). On the other hand, the Consolidated States Group contended that, since the law can be changed at any time, the NWPA assures neither an adequate level of funding nor a prolonged Congressional commitment (States, p. 4).

(2) *NRC Response.* The Commission believes that the general approach prescribed by the NWPA is to operate DOE's radioactive waste program on a full cost recovery basis. It seems clear that Congress intended to establish a long-term program for waste management and disposal, with built-in reviews and adjustments of funding as necessary to meet changing requirements. In this regard, the Act provides that DOE must annually review the amount of the established fees to determine whether collection of the fees will provide sufficient revenues to offset the expected costs. In the event DOE determines that the revenues being collected are less than the amount needed to recover costs, DOE must propose to Congress an adjustment to the fees to ensure full cost recovery. The Act also provides that, if at any time, the monies available in the waste fund are insufficient to support DOE's nuclear waste program, DOE will have the authority to borrow from the Treasury. The Commission believes that long-term funding provisions of the Act will ensure adequate financial support for DOE's nuclear waste program for FY 1984 and beyond.

The Commission believes that uncertainties regarding the adequacy of financial management of the nuclear waste program have also been reduced by the NWPA requirement that an Office of Civilian Radioactive Waste Management be established within the Department of Energy. This Office is to be headed by a Director, appointed by the President with Senate confirmation, who will report directly to the Secretary of Energy. Further, the Act stipulates that an annual comprehensive report of the activities and expenditures of the Office will be submitted to Congress and that an annual audit of the Office will be conducted by the Comptroller General, who will report the results to Congress.

Some concern has been expressed that the Congress may amend the funding provisions of the NWPA and thereby undermine the financial stability of the Federal radioactive waste management program. Commenters have not provided any basis for this belief. The Commission considers this possibility to be most unlikely. It is reasonable to assume that the long-range public health and safety and political concerns which motivated the Congress over the past several years to pass the NWPA will continue to motivate the Congress in considering amendments to the NWPA.

E. Schedule

(1) *Summary of Comments.* DOE contended that the NWPA provides additional assurance that a repository will be available by 1998. As the basis for this belief, DOE stated that sections 111 through 125 of the NWPA provide specific schedules and reporting requirements for the timely siting, development, construction, and operation by 1998 of a repository for high level waste and spent fuel (DOE, p. 6). DOE believed that these schedules and reporting requirements will ensure that deadlines are met. The Commission notes that DOE recognizes that there has been a delay of about 1-year in its schedule for meeting early milestones such as publication of its siting guidelines; nevertheless, DOE continues to maintain that its date for completion of repository development will be met (DOE Draft Mission Plan for the Civilan Radioactive Waste Management Program, April 1984).

The Consolidated Public Interest Group, however, did not believe that the provision of specific dates in the NWPA gives assurance that they will be met. CPIG cited, for example, the delay in preparing DOE's site selection guidelines, which were due by June 1983, and were expected to be delayed further (CPIG, p. 4).

Further, the CPIG contended that a date for the availability of a repository is not certain since both the President and the NRC have explicit authority to reject any or all site proposals that are submitted to them (CPIG, p. 4). Also, CPIG believed that the legislation contemplates the possibility of delay beyond satutory deadlines and NWPA's legislative history indicates that the timing of repository availability remains uncertain (CPIG, p. 5).

(2) *NRC Response.* One of the primary purposes of the NWPA is "to establish a schedule for the siting, construction, and operation of repositories that will provide reasonable assurance that the public and the environment will be adequately protected from the hazards posed by high-level radioactive waste and such spent nuclear fuel as may be disposed of in a repository." (Sec. 111(b)(1)). The Commission believes this purpose will be achieved.

As the Commission noted in the proposed decision, the Congress would not be able to legislate the schedules for the accomplishment of fundamental technical breakthroughs if it believed that such breakthroughs were necessary. They are not necessary. Rather, it is the Commission's judgment that the remaining uncertainties can be resolved by the planned step-by-step evaluation and development based on ongoing site studies and research programs. The Commission believes the Act provides means for resolution of

those institutional and technical issues most likely to delay repository development, both because it provides an assured source of funding and other significant institutional arrangements, and because it provides detailed procedures for maintaining progress, coordinating activities and rectifying weaknesses.

The Commmission believes that the milestones established by the Act are generally consistent with the schedules presented by DOE in the Waste Confidence proceeding and that those milestones are generally reasonable. Achievement of the scheduled first date of repository operation is further supported by other provisions of the Act which specify means for resolution of issues most likely to delay repository completion. One of the earlier milestones-publication of DOE's general guidelines for the recommendation of sites for a repository—was about a year behind schedule and the Commission was concerned that thisdelay could result in corresponding delays in DOE's nomination of at least five sites for characterization work. However, DOE has indicated in its draft Mission Plan (April, 1984) that the subsequent milestones have been scheduled to provide completion of the first repository by 1998. The Commission believes that the timely attainment of a repository does not require DOE's program schedule to adhere strictly to the milestones set out in the NWPA over the approximately 15 year duration of the repository development program. Delays in some milestones as well as advances in others can be expected.

The Commission has no evidence that delays of a year or so in meeting any of the milestones set forth in the NWPA would delay the repository availability date by more than a few years beyond the 1998 date specified in the NWPA. The Commission found reasonable assurance that a repository would be available by 2007–09, a decade later than that specified in the NWPA, and a date which allows for considerable slippage in the DOE schedule. The Act also requires that any Federal agency that determines that it cannot comply with the repository development schedule in the Act must notify both the Secretary of Energy and Congress, provide reasons for its inability to meet the deadlines, and submit recommendations for mitigating the delay. The Commission notes that the Act also clarifies how the requirements of the National Environmental Policy Act are to be met. These provisions of the Act, as well as the provisions for research, development and demonstration efforts regarding waste disposal, increase the prospects for having the first respository in operation not later than the first few years of the next century.

The repository development schedule may have to accommodate such contingencies as vetoes of proposed repository sites, prolonged public hearings, protracted litigation, possible project reorientation, or delay in promulgation of siting guidelines. The schedule now incorporated into the Act allows substantial time for these possibilities.

2. Discussion of the Safety of Dry Storage

A. Summary of Comments

DOE believed that the availability of dry storage techniques provides further reasonable assurance of the ability to safely store nuclear wastes at least 30 years beyond the expiration of reactor operating licenses. DOE stated that the citations quoted in the Commission's rationale are reliable and representative of the literature in the area, and that the Commission's technical judgment on dry storage conforms with DOE's experience and is accurate and correct (DOE, p. 16). The Consolidated Industry Group also stated that the pertinent points in the Commission's discussion appear to be adequately supported with appropriate references (Industry, pp. 10, 11).

In further support of the safety of dry storage, DOE cited the following:

—Extensive world-wide experience shows that dry fuel handling and storage is safe and efficient. Irradiated fuel has been handled, shipped, and safely stored under dry conditions since the mid-1940's. All types of irradiated fuel have been handled dry at hot cells, where a variety of phenomena have been observed in detail. The passive nature of most dry storage concepts contributes to the safety of interim storage by not requiring active cooling systems involving moving parts (DOE, p. 16).

—Regarding specific experience, DOE stated that a reactor fuel has been successfully stored in dry vaults licensed under Part 50 at the Hallam sodium-cooled graphite research reactor in Nebraska and the Fort St. Vrain HTGR prototype facility in Colorado. In addition, dry storage of zircaloy-clad fuel has been successfully conducted in drywells and in air-cooled vaults at DOE's Nevada Test Site. There is favorable foreign experience with dry storage at Wylfa, Wales in Great Britain, at Whitesell in Canada, in the Federal Republic of Germany, in France where vault dry storage of vitrified waste is routine, and in Japan, where a dry storage vault has been recently constructed (DOE, p. 17).

—To date, all dry storage tests have indicated satisfactory storage of zircaloy-clad fuel without cladding failure over the temperature range of 100 degrees C to 570 degrees C, in inert atmospheres. Existing data which support the conclusion that spent fuel can be stored safely in an inert atmosphere for at least 30 years is being augmented by additional ongoing research (DOE, pp. 17, 18).

None of the consolidated groups of participants offered comments which were critical of the Commission's discussion of the safety of dry storage.

B. NRC Response

The Commission is confident that dry storage installations can provide continued safe storage of spent fuel at reactor sites for at least 30 years after expiration of the reactor operating licenses.

3. List of Respondents

Consolidated Participants as Respondents to the Commission's Waste Confidence Decision

1. Department of Energy (DOE)
2. Consolidated States Representative [1] (States)
3. Consolidated Public Interest Representative [2] (CPIR)
4. Consolidated Industry Representative [3] (Industry)

PART II: Commission Consideration of Additional Comments on Its Fourth Finding

1. Introduction

On November 3, 1983, the Commission reopened the comment period in this proceeding to receive comments on: (1)

[1] The Consolidated States Group consists of the Attorney General of the State of New York, Minnesota (by its Attorney General and the Minnesota Pollution Control Agency), Ohio, South Carolina and Wisconsin. The remaining participants previously consolidated in the States Group have not joined in these comments.

[2] The Consolidated Public Interest Group is represented here by the Natural Resources Defense Council, Inc., the New England Coalition on Nuclear Pollution, the Sierra Club, the Environmental Coalition on Nuclear Power, Wisconsin's Environmental Decade, Mississippians Against Disposal, Safe Haven, Ltd., John O'Neill, Jr., and Marvin Lewis.

[3] The Consolidated Industry Group is represented by: American Institute of Chemical Engineers; American Nuclear Society; Association of Engineering Geologists; Atomic Industrial Forum; Bechtel National; Consumers Power; General Electric; Neighbors for the Environment; Scientists and Engineers for Secure Energy; Tennessee Valley Authority; the Utilities Group (Niagara Mohawk Power Corporation, Omaha Public Power District, Power Authority of the State of New York, and Public Service Company of Indiana, Inc.); and the Utility Nuclear Waste Management Group—Edison Electric Institute. In order to emphasize the independent nature of its participation, the American Nuclear Society has chosen to proceed separately. ANS continues to protest its assignment to the Consolidated Industry Group and has offered separate comments on the Commission's Waste Confidence decision. Since only the consolidated groups of participants were invited to comment on the proposed decision, the ANS's separate comments are not discussed here. Further, TVA, as a Federal agency, wishes to stress the independent nature of its paticipation.

The environmental aspects of its fourth finding—that it has reasonable assurance that, if necessary, spent fuel can be stored without significant environmental effects for at least 30 years beyond the expiration of reactor operating licenses at reactor spent fuel storage basins, or at either onsite or offsite independent spent fuel storage installations; (2) the determination that there are no significant non-radiological consequences which could adversely affect the environment if spent fuel is stored beyond the expiration of operating licenses either at reactors or at independent spent fuel storage installations; and (3) implications of comments on items (1) and (2) above for the proposed amendment to 10 CFR Part 51 (48 FR 50746).

The Commission has considered those comments and, for the reasons discussed below, finds no reason to substantively modify its fourth finding or other related aspects of its decision in this proceeding. The Commission has, however, made revisions in its fourth finding to clarify its original intent.

Thirteen comments were received. Seven commenters identified various reasons which they believed argued against the finding.[4] Six commentors supported the finding.[5] In addition to the issues on which the Commission specifically requested comments, some commentors raised additional issues regarding the Commission's compliance with the National Environmental Policy Act (NEPA).

2. Environmental Aspects of Extended Storage of Spent Fuel

A. Radiological Consequences of Spent Fuel Storage

The Commission's proposed fourth finding stated:

> The Commission finds reasonable assurance that, if necessary, spent fuel can be stored safely without significant environmental effects for at least 30 years beyond the expiration of reactor operating licenses at reactor spent fuel storage basins, or at either onsite or offsite independent spent fuel storage installations.

The public was invited to submit additional comments on the environmental aspects of this finding. Those comments, and the Commission's responses to them, are set out below.

The State of Minnesota ("Minnesota"), through its Attorney General, and the Sierra Club believe that an event at the spent fuel pool for Prairie Island Nuclear Generating Station ("Prairie Island") indicates that irradiated spent fuel assemblies are degrading rapidly with time. In December 1981, during a fuel transfer operation at Prairie Island, the top nozzle assembly separated from the remainder of a spent fuel assembly due to stress corrosion cracking of the spent fuel assembly while it was in the spent fuel pool. Minnesota and the Sierra Club acknowledge that this separation was an isolated event; over 5,000 similar spent fuel assemblies have been moved successfully at other plants. These commentors also acknowledge that television examination showed no corrosion cracking of similarly designed fuel assemblies at other nuclear power plants: Zion, Trojan, Kewanee and Point Beach. They also acknowledge that even though the water contaminant contributing to stress corrosion cracking has never been identified, the possibility that it may have been sulfates has led the Commission to suggest that Prairie Island monitor the sulfate levels of its spent fuel pool.

However, the Sierra Club contended[6] that the NRC staff essentially ignored the opinion of Mr. Earl J. Brown, an NRC engineer, that sulfate contamination is a generic problem at Pressurized Water Reactors (PWRs). The Sierra Club also believes that television inspection of spent fuel assemblies in spent fuel pools cannot reveal the initial signs of stress corrosion cracking. For these reasons, the Sierra Club and Minnesota believe that there is no assurance that spent fuel can be stored safely in spent fuel pools for 30 years after reactor shut down or for 60 years after irradiation.

The NRC investigated the Prairie Island event and found it to be an isolated event without generic impact. The staff also concluded that if a fuel assembly were to drop due to top nozzle failures, such an event would not lead to a criticality hazard in a spent fuel pool and that such an accident would result in radiation levels at the site boundary well within the limits in 10 CFR Part 100. The NRC Staff Assessment Report ("SAR") and associated memoranda, although already publicly available in the Commission's Public Document Room, have been added to the docket of this proceeding. That SAR concluded that the event was caused by intergranular stress-corrosion cracking due to an unidentified corrodant temporarily present in the spent fuel pool.

As for the Sierra Club's specific comments, the staff recognized that sulfate contamination was suspected to have contributed to the corrosion and recommended that licensees administratively control sulfate level concentrations in spent fuel pools. Such monitoring had been recommended by Mr. Brown as the only action that should be taken in response to the incident. Although Mr. Brown stated that in his opinion the event was a "potential" generic issue for PWRs, subsequent staff investigation revealed that the event was an isolated incident. The staff also considered the properties of the steel used in the spent fuel assemblies and acknowledged that they could have contributed to the event. However, the absence of any similar events for 5,000 other spent fuel assemblies indicated that the type of steel was not critical. Accordingly, the Commission finds no basis for reconsidering the Safety Assessment Report's finding that the Prairie Island event was an isolated incident and recommendation that sulfate control was an adequate response, or for altering its conclusion concerning the potential environmental impacts of stored spent fuel.

Wisconsin, Safe Haven, Ltd. and NRDC contended that the environmental effects of extended spent fuel storage are site specific and should be considered on a case-by-case basis.[7] Safe Haven believes that the individuality of each plant and its environmental surroundings necessitate separate evaluations of extended storage of spent fuel, but identified no site-specific factors which would result in significant environmental impacts. NRDC listed some site specific factors: geology, hydrology, seismicity, ecological factors and individual proposals for spent fuel management and storage. However, NRDC did not suggest how these factors could lead to significant site-specific environmental impacts that would preclude the Commission from making a generic finding. Similarly, Wisconsin listed as relevant factors proximity to population centers, highways, geologic faults, dams, flood plains or shorelines affected by erosion, but offered no suggestion of how these factors could affect the Commission's generic determination. For example, there has been no discussion of why the Commission's seismic design requirements, though site specific, are not generically adequate to assure that spent fuel can be stored for

[4] Department of Law of the State of New York, Marvin Lewis, Sierra Club, Safe Haven, Ltd., Attorney General of the State of Minnesota, Department of Justice of the State of Wisconsin and Natural Resources Defense Council, Inc.

[5] Scientists and Engineers for Secure Energy, Inc. American Institute of Chemical Engineers, American Nuclear Society, Utility Nuclear Waste Management Group—Edison Electric Institute, and U.S. Department of Energy.

[6] Sierra Club also stated that the staff did not consider an Oak Ridge report (ORNL-3684, Nov. 1964) which identified water vapor as contributing to corrosion of the type of steel used in spent fuel assemblies. That report is not germane to light water reactor fuel because it addressed the sensitization of stainless steel in a high temperature gas cooled reactor environment, which is very different from the environment of a light water reactor. Refer to the discussion in Sec. 2.4A of the Appendix to the Commission's decision.

[7] Safe Haven also suggested that a full environmental and safety review should accompany any utility's proposed plans submitted pursuant to 10 CFR 50 (§ 50.54(aa)) for extended storage of spent fuel. The Commission will treat its review of any such utility proposal in accordance with the established procedures for considering any application for a license amendment.

up to 30 more years in a spent fuel pool designed to withstand the largest expected earthquake at each reactor site. Mr. Marvin Lewis contended that the fourth finding had no basis because the Commission had little or no experience with storing spent fuel for 30 years or with storing fuel that could be up to 70 years old. Mr. Lewis also asserted that the pyrophoricity of the zircaloy tubes containing spent fuel for 30 years presents and unknown fire danger. This comment is based on a private communication to Mr. Lewis regarding the condition of the spent fuel at Three Mile Island, Unit 2. By the terms of that letter, any fire danger associated with pyrophoricity of zircaloy arises from the accident conditions at TMI–2. NRC has previously studied the effects of loss of water from pools on the temperature of stored spent fuel (NUREG/CR–0649, "Spent Fuel Heatup Following Loss of Water During Storage" [March, 1979]). While this study noted that oxidation could become self-sustaining for temperatures in the neighborhood of 850–950° C (NUREG/CR–0649, page 13), the study shows that such oxidation can only occur for extreme temperature conditions and for spent fuel that has been stored for a relatively brief storage period. In order for rapid oxidation to occur, the age of the spent fuel (30,000 MWD/MT burnup) would have to be in the range of less than 10 days to less than two years, depending on the density at which it is stored (see page 55, Figure 17 of NUREG/CR–0649). Moreover, one must assume a continuing oxygen supply adequate to sustain the oxidation. Any damaged spent fuel such as that from TMI–2, would be canned to avoid particulate loss and would have already aged several years. Neither the heat load leading to temperatures capable of initiating rapid oxidation nor the presence of an adequate supply of oxygen to sustain a pyrophoric reaction would seem to be present in any storage configuration or under conditions that would receive NRC approval. While it is correct that spent fuel has not been stored for over 30 years, the record shows that utilities have successfully stored spent fuel for over 20 years, and that there are no known physical processes which would indicate that it is impractical to extrapolate that experience to make predictions about the behavior of spent fuel for 70 years of storage.

The Utility Nuclear Waste Management Group—Edison Electric Institute and the U.S. Department of Energy referred to several documents in the record which show that the relatively low energy content of spent fuel and the relatively benign static environment of spent fuel storage render insignificant the radiologic impacts arising from extended storage of spent fuel. As discussed in more detail below, these documents also show that there are no significant non-radiologic environmental impacts arising from such extended storage. Under these circumstances, the Commission finds that it has sufficient experience with spent fuel storage to predict spent fuel behavior during 70 years of storage and to find that such storage will not result in significant environment effects.

B. Non-Radiological Consequences of Spent Fuel Storage

The Commission's fourth finding rested in part on the Commission's determination that there are no significant non-radiological consequences due to the extended storage of spent fuel which could adversely affect the environment. The public was invited to comment also on this finding and to provide a detailed discussion of any such environmental impacts. Mr. Marvin Lewis asserted that the continuous storage of spent fuel under water for 30 years or more requires unprecedented institutional guarantees. He also noted that there had been no consideration of financial, economic and security implications of storage for 30 or more years. Mr. Lewis did not expand upon these assertions to explain how they would result in significant non-radiological environmental consequences. In any event, the more than twenty years of experience with storing spent fuel demonstrates that storage of spent fuel for 30 years or more does not require unprecedented institutional guarantees or raise unique questions regarding finances, economics or the security of extended spent fuel storage. Further, the Commission will require all reactor licensees, 5 years before expiration of their operating license to provide a plan for managing the spent fuel prior to disposal. Moreover, the record documents referred to by UNWMG–EEI, DOE and AIF show that there are no significant non-radiological environmental impacts associated with the extended storage of spent fuels. The amount of heat given off by spent fuel decreases with time as the fuel ages and decays radioactively. No additional land needs to be devoted to storage facilities because reactor sites have adequate space for additional spent fuel pools or dry storage installations. The additional energy and water needed to maintain spent fuel storage is also environmentally insignificant. No commentor has challenged these assessments of environmental impacts and the Commission has no reason to question their validity. Under these circumstances, the Commission has no reason to reassess its prior determination that extended storage of spent fuel will present no significant non-radiological consequences which could adversely affect the environment.

3. Commission Compliance With NEPA

Several participants challenged the Commission's compliance with NEPA. The States of New York ("New York") and Wisconsin contend that since its inception, this proceeding has focused on the availability and safety of spent fuel storage, and has been conducted outside the scope of NEPA. New York supports this contention with the following quote from the First Prehearing Conference Order (February 1, 1980):

> This rulemaking proceeding does not involve a major federal action having a significant impact on the environment, and consequently an environmental impact statement is not required by NEPA . . .

New York asserts that this statement caused the participants not to consider NEPA in their filings. Accordingly, New York believes that the Commission cannot now transform the Waste Confidence Proceeding into a NEPA proceeding. In New York's view, joined by the Natural Resources Defense Council, Inc. ("NEDC"), NEPA required the Commission to prepare an environmental impact statement ("EIS") or environmental assessment to consider the environmental impacts of spent-fuel storage at reactor sites beyond the expiration dates of reactor licenses. The Utility Nuclear Waste Management Group-Edison Electric Institute ("UNWMG–EEI") believes that it has been clear from the outset of this proceeding that the Commission intended to develop environmental regulations appropriate to the issues considered here. UNWMG–EEI cites several factors in support of its position: (1) this proceeding was the direct outgrowth of a NEPA case, *Minnesota* v. *NRC*, 602 F.2d 412 (D.C. Cir. 1979); (2) the Notice of Proposed Rulemaking explicitly stated a Commission intent to deal with environmental aspects of spent fuel storage; (3) the proceeding was docketed under Part 51, the Commission's regulations implementing NEPA; (4) the Commission stated that it would draw on the record of the rulemaking on environmental impact of the nuclear fuel cycle (Table S–3) and included in the NRC Data Bank for this proceeding sources of information on the environmental impacts of spent fuel storage; and (5) several participants included in their statements information pertaining to the environmental impacts of spent fuel storage.

The Commission believes that from the very beginning of this proceeding, participants were on notice that environmental aspects of spent fuel storage were under consideration. The notice initiating this proceeding stated,

in pertinent part:

> If the Commission finds reasonable assurance that safe, off-site disposal for radioactive wastes from licensed facilities will be available prior to expiration of the facilities' licenses, it will promulgate a final rule providing that the *environmental and safety implications of continued on-site storage after the termination of licenses* need not be considered in individual licensing proceedings. In the event the Commission determines that on-site storage after license expiration may be necessary or appropriate, it will issue a proposed rule providing *how that question will be addressed.*
>
> * * * * *
>
> Based on the material received in this proceeding and on any other relevant information properly available to it, the Commission will publish a proposed or final rule in the **Federal Register**. Any such final rule will be effective thirty days after publication.
>
> 44 FR 61372, 61373–61374 (1979). (Emphasis supplied).

It is clear from this notice that if the Commission found that onsite storage after termination of reactor operating licenses would be necessary or appropriate, then it would propose a rule for dealing with the question of environmental and safety implications of continued onsite storage. New York's reference to the statement in the First Prehearing Conference Order is inapposite. That statement addressed the issue of whether a decision in this proceeding would be a proposal for major federal action having significant impact on the environment so as to require an EIS. The Presiding Officer found that the decision itself would not require an EIS. His decision in no way implied a change in the scope of the proceeding as announced in the notice initiating it.

There is also nothing about the Commission's fourth finding which requires an EIS. Neither New York nor NRDC has explained how this finding is a major federal action having a significant impact on the human environment. The finding provides a basis for a rule that provides that environmental impacts from extended storage of spent fuel are so insignificant as not to be required to be included in an impact statement. The validity of such a rule depends on the procedures used to promulgate it and the record supporting it. An EIS is not required because such a rule itself has no environmental impacts, significant or otherwise.[8] To require an EIS here would be essentially to require an EIS to show that no EIS is required. Clearly such a result would be incorrect. Accordingly, the Commission finds that NEPA does not require an EIS to support the fourth finding.

[8] See, for example, *Natural Resources Defense Council, Inc., v. U.S. Nuclear Regulatory Commission*, 547 F.2d 633, 633, n. 57 (D.C. Cir. 1976), *reversed on other grounds, sub nom. Vermont Yankee Nuclear Power Corp. v. NRC*, 435 U.S. 519 (1978).

4. List of Respondents

Respondents to the Commission's November 3, 1983 Order (48 FR 50746) To Reopen the Period for Limited Comment on the Environmental Aspects of the Commission's Fourth Finding in the Waste Confidence Proceeding

1. Attorney General of the State of New York (N.Y.)
2. Marvin Lewis (Lewis)
3. Sierra Club Radioactive Waste Campaign (Sierra)
4. Scientists and Engineers for Secure Energy, Inc. (SE2)
5. Safe Haven, Ltd. (S.H.)
6. American Institute of Chemical Engineers (AICE)
7. Atomic Industrial Forum, Inc. (AIF)
8. Utility Nuclear Waste Management Group—Edison Electric Institute (UNWMG–EEI)
9. Natural Resources Defense Council, Inc. (NRDC)
10. Attorney General of the State of Wisconsin (Wis.)
11. U.S. Department of Energy (DOE)
12. American Nuclear Society (ANS)
13. Attorney General of the State of Minnesota (Minn.)

Appendix—Rationale for Commission Findings in the Matter of the Waste Confidence Proceeding

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1.0 Introduction

The rationale for the five Commission findings resulting from the Waste Confidence proceeding is summarized below. This rationale is based principally on the record of the proceeding which includes participants' position statements, cross-statements, pre-hearing and oral statements (in the discussion below, the participants are identified by the citations defined in the Reference Notation at the end of this document). The Commission also relied on the provisions of the Nuclear Waste Policy Act of 1982 (NWPA), and other substantive material not originally included in the record relating to the discussion of the safety of dry storage of spent nuclear fuel in the Commission's Fourth Finding; the NWPA and the dry storage material have now been incorporated into the record along with the relevant comments of participants in this proceeding.

The Commission notes that two relevant developments have occurred subsequent to the closing of the record in the Waste Confidence proceeding. They are the publication of DOE's draft Mission Plan for the Civilian Radioactive Waste Management Program (April, 1984) and the Commission's concurrence in DOE's General Guidelines for Recommendation of Sites for Nuclear Waste Repositories (July 3, 1984). These developments are a matter of public record, and in the case of the Commission's concurrence was the conclusion of a separate public proceeding. The Commission has considered the effects of these developments on its previously announced decision in this proceeding and determined that these developments do not substantially modify the Commission's previous conclusions.

2.0 Rationale for Commission Findings

2.1 First Commission Finding

The Commission finds reasonable assurance that safe disposal of radioactive waste and spent fuel in a mined geologic repository is technically feasible.

The Commission finds that safe disposal of high-level radioactive waste and spent fuel is technically possible and that it is achievable using existing technology. Although a repository has not yet been constructed and its safety and environmental acceptability demonstrated, no fundamental breakthrough in science or technology is needed to implement a successful waste disposal program. Those participants who questioned the availability of a repository did not contend that fundamental scientific breakthroughs were required, but questioned whether

technical problems could be resolved in a timely manner. The record supports the conclusion that the safe disposal of high level radioactive waste and spent nuclear fuel from licensed facilities can be accomplished.

The Department of Energy's (DOE) position is that disposal in mined geologic repositories can meet the goal of providing safe and effective isolation of radionuclides from the environment (DOE PHS pp. 2, 4; Tr. p. 11). A number of participants stated that waste containment and isolation from the biosphere are scientifically feasible (USGS PS p. 4; NRDC PS p. 9; UNWMG–EEI PS, Doc. 1 p. 22, Doc. II p. II–6; Consolidated Industry Group Tr. p. 16; Consolidated States Group Tr. p. 98). This view is consistent with the conclusions of the *Report to the American Physical Society by the Study Group on Nuclear Fuel Cycles and Waste Management (Rev. Mod. Phys.*, Vol. 50, No. 1, Pt. II, p. S6, Jan. 1980) and the *Report to the President of the Interagency Review Group on Nuclear Waste Management* (Final Report, March, 1979, p. 38).

The conclusion that safe radioactive waste disposal is technically feasible is based on consideration of the basic features of repository design and the problems to be solved in developing the final design. A mined geologic repository for disposal of high-level radioactive waste, as developed during the past three decades, will be based on application of the multi-barrier approach for isolation of radionuclides. The high-level radioactive waste or spent fuel is to be contained in a sealed package and any leakage from the package is to be retarded from migrating to the biosphere by engineered barriers. These engineered barriers include backfilling and sealing of the drifts and shafts of the mined repository. We believe that the isolation capability and long-term stability of the geologic setting provide a final barrier to migration to the biosphere.

The selection of a suitable geologic setting is one of the key technical problems which DOE must solve. Other problems include development of waste packages that can contain the waste until the fission product hazard is greatly reduced and engineered barriers that can effectively retard migration of radionuclides out of the repository. The Commission recognizes that these three problems are not only the ones which DOE's program must solve, but they are critical components of the multi-barrier approach for nuclear waste isolation. Much of the discussion in this proceeding has focused on these problems. We have reviewed each of these issues and have concluded that they do not present an insoluble problem which will prevent safe disposal of radioactive waste and spent fuel.

A. The Identification of Acceptable Sites

There is general agreement among the participants that the period during which the wastes must be isolated from the biosphere is at least several millenia and that such prolonged isolation can be achieved in a deep mined respository provided the geologic setting is suitable. The geologic setting is the "final" isolating barrier. If the waste package and engineered barriers fail to perform as expected, the geologic barrier must prevent harmful quantities of radioactive materials from entering the human environment.

The Commission believes that technically acceptable sites exist and can be identified. In many locations in the continental United States there are geologic media potentially suitable for a waste repository. These media occur in large, relatively homogeneous and unfaulted formations and have properties (e.g., mechanical strength, thermal stability, impermeability to water which qualify them as potential host rocks for radioactive wastes. The potential host rocks include those being investigated by DOE—that is, domed salt, bedded salt, tuff, basalt, granite, and shale (DOE PS pp. II–70 to II–80.). Thousands of square miles of the United States are underlain with formations containing extensive masses of such potential host rocks. Moreover, more than one-half of the United States is underlain with rock that has been stable against significant deformation and disruption for over ten million years. The potential sites being investigated by DOE are in regions of relative tectonic stability (USGS PS pp. 19, 23, 24, 25, 26, 28; Tr. p. 236).

Host rock suitability and formation stability are not the only relevant technical factors to be considered in repository site selection. Geohydrologic conditions—particularly the absence of significant groundwater flow from the repository to the biosphere—must be favorable for effective isolation of the wastes (USGS PS p. 11). DOE's investigations reveal that the hydrologic characteristics of a major portion of the sites underlain with stable formations of potential host rock appear to be suitable for repository location (Tr. p. 236; DOE PS p. II–77).

These general conclusions about the extent of potential repository sites are based on the results of DOE's site exploration program (DOE PS Appendix B) and the extensive body of earth-sciences information available at the United States Geological Survey—the Federal agency principally concerned with earth-sciences issues and, under a DOE–USGS Memorandum of Understanding, a primary source of geologic, hydrologic and mineral resource data for the National Waste Terminal Storage program (USGS PS p. 2 and Appendix A; DOE PS p. III–44).

DOE's site exploration efforts are focused on four host rocks (domed salt, bedded salt, basalt, and tuff) in six regions (Gulf Interior, Paradox Basin, Permian Basin, Salina Basin, DOE Hanford Site, DOE Nevada Test Site) (DOE PS Appendix B). Although investigations of granite sites in the U.S. have been limited, DOE is developing data on the potential of granite as a host rock in collaboration with foreign investigators. A Swedish-American cooperative program (DOE's Lawrence Berkeley Laboratory is the U.S. principal in the program) has involved a series of *in situ* tests in a granite formation conducted at the Stripa mine in Sweden. The investigations included determinations of thermally induced stresses and deformations in the granite rock mass. Another cooperative study at Studsvik in Sweden involved experiments in nuclide migration in fractured subsurface crystalline rocks (DOE PS p. II–258).

Some participants objected to the fact that most of DOE's site exploration involved federally-owned or -controlled areas, arguing that this would result in ignoring sites that were technically better (NRDC PS p. 17; Tr. p. 206). This objection, apparently based on the assumption that Federal lands investigated were limited in area and geologic diversity, is not supported by the record. The Federal lands being investigated by DOE are extensive and geologically diverse; moreover, they are more readily accessible to DOE and some of them, such as Nevada Test Site, have been previously subjected to extensive geologic assessment. These latter factors are significant advantages (DOE PS Appendix B; UNWMG–EEI CS p. IV. B–4). Although, as the United States Geological Survey pointed out, there may be advantages from a purely earth-science viewpoint in examining all parts of the country for their potential as repositories, time and resource limitations require that site exploration efforts be concentrated in limited regions fairly early so that detailed site-specific characterization efforts can be undertaken in a timely way (USGS PS p. 17).

A specific site has not yet been identified as technically acceptable, and investigations of potential sites have shown some to be unsuitable. This does not necessarily mean that DOE's site selection program will be unsuccessful in identifying technically acceptable sites. The elimination of some sites is to be expected in a pursuit of the site selection program and is not, as some participants implied, an indication that suitable sites cannot ultimately be found.

Although the record of this proceeding

does not show that DOE has progressed far enough in site characterization to confirm the existence of an acceptable site, the record does indicate that DOE's site characterization and selection program is technically sound. The data obtained in each stage of the screening process are analyzed and compared against criteria that must be satisfied for adequate performance of the total isolation system. DOE's program is providing information on site characteristics at a sufficiently large number and variety of sites and geologic media to support the expectation that one or more technically acceptable sites will be identified (DOE PS pp. III–8 to III–24; CS p. II–140). As discussed above, DOE's site screening efforts have concentrated on a diverse set of potentially suitable geologic media and are directed to an examination of large areas of the country on both federally-owned and non-federal lands (USGS PS p. 17).

The technology for site identification is particularly well-advanced (UNWMG–EEI PS p. III–A–b79). The record describes numerous site characterization techniques, both remote sensing and *in-situ*, which are being used to evaluate sites (DOE PS pp. II–84 to II–103). The location and demonstration of acceptability of repository sites are problems which can be solved by the investigative and analytical methods now available (AEG PS p. 1). Site selection criteria are being refined (DOE PS pp. II–80 to II–83; 48 FR 5671, February 7, 1983) and the technology exists for site characterization (DOE PS pp. II–84 to II–103). Areas have been found where most natural geologic and hydrologic processes operate at rates favorable to long-term containment in a mined repository (DOE PS p. II–128; Consolidated Industry Group PHS p. 9).

The Commission recognizes that there are gaps in the current state of knowledge about potential repository sites and geologic media, and about geochemical processes which affect radionuclide migration (e.g., CEC PS pp. 17, 54; NRDC PS pp. 18, 50, 64; NY pp. 38, 80; USGS CS pp. 5, 6). The gaps include a lack of a detailed understanding of such relevant processes as sorption of radionuclide-bearing molecules by the geologic media, leaching of the wastes by groundwater, and radionuclide migration through subsurface formations. Some participants contend that these gaps and uncertainties in knowledge make it difficult to predict on the basis of any effort less than a detailed on-site investigation whether a candidate repository site will be technically suitable (e.g., NRDC PS pp. 18, 50, 53; ECNP PS pp. 3, 4; NECNP PS pp. 20, 21, 22).

The Commission recognizes that detailed site characterization is necessary to confirm that a proposed site is indeed suitable. The Commission does not believe, however, that all uncertainties must be resolved as a pre-condition to repository development. The performance of a repository may be bounded by using conservative values for controlling parameters, such as waste form solubility, ground water travel time and retardation of radionuclides. Furthermore, bounding analyses can be useful to take residual gaps in knowledge and uncertainties into account. If it can be established that a repository can perform its isolation function using established, conservative values for the controlling parameters, then it is not necessary to resolve uncertainties in the range of value these parameters may exhibit (DOE CS pp. II–83, II–84, II–130, III–9, III–12).

The statements of those participants who are pessimistic about timely accomplishment of disposal tend to assign equal importance to all areas of uncertainty. Hence, they contain few attempts to assess the consequences of gaps in knowledge or to project the benefits of expected results from ongoing research and development efforts. It is the Commission's belief that the waste isolation system elements are adequately understood so that major unforeseen surprises in results of research and development are highly unlikely. This view is supported by USGS (USGS CS pp. 1–2).

A further concern of some participants is that, even if DOE were to identify a potentially acceptable repository site, the *in-situ* testing required to determine acceptability would breach the integrity of the candidate site (NY PS pp. 59, 63–65). If, for example, boreholes essential to characterize a potential site result in penetration of aquifers which are not amenable to effective sealing, this might make the site unacceptable (DOE PS pp. II–161 to II–164). However, no persuasive evidence was presented in the record to support the position that *in-situ* tests for site characterization work are likely to compromise the integrity of candidate sites. The Commission believes that *in-situ* tests can be successfully accomplished without adversely affecting site integrity for the following reasons. Many non-destructive remote sensing methods are available for determining site characteristics. Further, boreholes can be located in shafts or pillars of the future repository to minimize the possibility of leakage through them.

As discussed later, borehole sealing methods are expected to be adequate. The number of boreholes necessary to adequately characterize a site can be minimized by careful planning and by use of remote sensing methods in conjunction with the drilling program (DOE PS pp. II–84 to II–103, II–161). Finally, the Commission believes that if a site is found to be sufficiently sensitive to the testing program so that its integrity would be destroyed, then that site would necessarily be found unacceptable.

In summary, the Commission believes that technically acceptable sites for disposal of radioactive waste and spent fuel exist and can be found. There are a number of suitable host rock type to select from; many areas are underlain with massive, stable formations containing these host rocks; the areas being investigated by DOE contain such rock formations; and the uncertainties in knowledge of the earth and material sciences relevant to the identification of an acceptable repository site are not fundamental uncertainties that would prevent the identification of technically acceptable sites. Further, *in-situ* testing required to characterize a candidate site would not necessarily compromise its integrity.

B. The Development of Effective Waste Packages

1. *Waste Package Considerations.* An important technical aspect of safe waste disposal is to assure that the waste form and the balance of the waste package, including the primary container and ancillary enclosures, are capable of containing the radioactivity for a time sufficient for the hazard from fission-product activity to be significantly reduced (e.g., DOE PS p. II–8). Decay heat, groundwater and nuclear radiation could cause the waste package components to interact with each other or with the host rock materials in such a way as to degrade the ability of the package to contain the radionuclides. These items are discussed below.

To assure long-term containment, DOE's conceptual design of a waste package is based on a defense-in-depth approach and involves a number of components including spent fuel, stabilizer (or filler), waste canister, overpack, and an emplacement hole sleeve. The stabilizer is intended to improve heat transfer from the spent fuel, to provide mechanical resistance to possible canister collapse caused by lithostatic pressure, and to act as a corrosion-resistant barrier between the spent fuel and the canister. Selection of canister overpack and emplacement hole sleeve materials will be based on tests of their chemical and physical integrity at various temperatures and levels of radiation and under various conditions of groundwater chemistry, as well as tests of their compatibility with each other and with the host rock materials under repository conditions. The canister, overpack, and sleeve should constitute relatively impermeable elements of the waste package. A variety of candidate materials is being considered for these

elements. The various waste package components are to be combined in a conservative design that will compensate for the overall technical uncertainties in containment capability. The requirement for retrievability during some specified period after emplacement places conditions (e.g., ruggedness) on waste package design which are added factors to be considered in its development (DOE PS p. II–129 to II–152, II–282).

It is apparent from the foregoing that the development of an effective waste package depends on obtaining engineering data on those materials that appear to be promising candidates for package components. DOE is studying over 28 candidate materials for canisters and overpack (DOE PS p. II–143). The DOE evaluation program indicates that many of these materials are promising. For example, iron alloys have demonstrated long term durability (DOE PS p. II–144, Reference 383), and titanium alloys and nickel alloys show high resistance to corrosion (DOE PS p. II–144, Refs. 315, 338, 342). Ceramics are resistant to chemical degradation and have many other desirable properties (DOE PS p. II–145, Refs. 337, 347, 348 and 349). Preliminary analysis indicates that mild steel canisters with an appropriate backfill material would be a feasible waste package for either a salt or hard rock repository. For more demanding requirements, such as brine applications, the alloys of titanium, zirconium or nickel appear to represent alternate choices (DOE PS p. II–150, Refs. 337, 382). The DOE program also includes experimental studies of the release of radioisotopes from spent fuel exposed to simulated repository conditions (e.g., salt brine and fresh water with varying dissolved oxygen content). The studies are being conducted under temperature and pressure conditions that bound and exceed repository conditions (DOE PS pp. II–139 to II–141).

Not all participants were optimistic about waste package development. One participant asserted that in spite of DOE's efforts to develop a package that would remain inert and stable under repository conditions, none had yet been found and the DOE program would not succeed in finding one (NRDC PS p. 46). Other participants pointed to the limits of present knowledge, particularly about the leaching of radioisotopes from spent fuel in a groundwater environment, and concluded that it is not possible to select a waste form which will prevent radioisotopes from migrating to the biosphere (e.g., CEC PS p. 51). They also pointed out that chemical and physical properties of spent fuel varied widely and depended on burnup, location within the reactor core, age, and physical integrity; design of a system of barriers to accommodate this heterogeneity within the context of a given geohydrologic environment would be a major undertaking (NY PS p. 83).

The Commission recognizes the difficulties which must be overcome in developing a suitable waste package. A large body of experimental data must be accumulated and applied to a variety of candidate arrangements of waste package components. Suitably conservative assumptions must be postulated to define the repository conditions. Data from experiments of relatively short duration have to be used to predict behavior for much longer periods. It is common practice in materials research to perform short-duration experiments under physical or chemical conditions much more severe than those expected for the longer duration and, from known fundamental properties of the materials under investigation, to extrapolate the experimental data to predict long-term behavior. Conservatism can usually be assured by making the experimental conditions sufficiently severe.

The complex composition of the mixture of radionuclides in fission products and their basic chemical properties are known and have been the subject of investigation for more than three decades. The large body of published data on fission product chemistry and experience with fission product mixtures should provide considerable support for predicting the behavior of spent fuel and high-level radioactive waste in waste package designs.[1] The Commission, therefore, concludes that the chemical and physical properties of spent nuclear fuel and high-level radioactive waste can be sufficiently understood to permit the design of a suitable waste package.

The Commission also concludes that the DOE program is capable of developing a suitable waste package which can be disposed of in a mined geologic respository. This conclusion is based upon the large number of candidate materials being considered by DOE, the detailed evaluation of these materials to be conducted as part of the DOE program and the results of DOE's preliminary analysis of candidate materials, as described above (see Sec. 2.1(b)(1)). The Commission's conclusion that the development of a suitable waste package is technically feasible is also consistent with other material in the record. For example, a study sponsored by the National Academy of Sciences (NAS) concluded that no insurmountable technical obstacles were foreseen to preclude safe disposal of nuclear wastes in geologic formations (UNWMG–EEI PS Doc. 2 p. II–6). The United States Geological Survey stated that a long-lived canister is within the capability of materials science technology to be achieved in the same time frame as repository site identification, qualification and development (USGS PS p. 11). The National Research Council, after reviewing the Swedish waste disposal work (DOE PS p. II–335 Ref. 380), concluded that the Swedish waste package could contain the radionuclides in spent fuel rods for hundreds of thousands of years (DOE CS p. II–98).

2. *Effect of Reprocessing on Waste Form and Waste Package.* The waste form itself (spent fuel or other high-level waste) serves as the first barrier to radionuclide release and thus supplements the containment capability of the other components of the waste package as well as the repository's natural isolation capability. Throughout this proceeding it has been assumed that the waste form would be spent fuel discharged from light water reactors, with mechanical disassembly for volume reduction and packaging in a canister as the only potential modifications. The relevant properties of the spent fuel (irradiated uranium dioxide pellets and zircaloy cladding) are known. DOE's program has been directed toward providing data to determine the behavior of spent fuel as a waste package component under repository conditions. In its Position Statement DOE stated that the "representative case" to be considered in this proceeding is the disposal and storage of spent fuel from commercial reactors and that this does not foreclose "other approaches, such as the reprocessing of spent fuel and solidification of resultant nuclear wastes" (DOE PS p. I–2).

On August 27, 1981 the National Resources Defense Council filed a Motion for Judgment requesting a prompt ruling that, on the basis of the present record, there is not reasonable assurance that off-site storage or disposal will be available by the year 2007–09. NRDC stated that, because the present Administration[2] had changed Federal policy towards commercial reprocessing of spent fuel (reprocessing was deferred "indefinitely" in April 1977 by the previous Administration), the disposal of spent fuel would be contrary to the present Administration's policy, and thus spent fuel was no longer a valid "reference waste form" for this

[1] Published compilations of such data, although not specifically included in the record of this proceeding, are well known to the nuclear science and engineering community. Examples are the three volumes of the National Nuclear Energy Series, "Radiological Studies: The Fission Products," by C. D. Coryell and N. Sugarman, McGraw-Hill, 1951; "Reactor Handbook," Second Edition, Vol. II, Fuel Reprocessing, edited by S.M. Stoller and R.B. Richards, Interscience Publishers, Inc., New York, 1961).

[2] The NRDC statement was based on DOE testimony before a Congressional committee. The President's Nuclear Policy Statement of October 8, 1981 confirmed the DOE testimony.

proceeding. As a consequence, according to NRDC, DOE schedules and timetables, which were based on spent fuel storage and disposal, were irrelevant. The NRDC view was challenged by DOE as well as by seven participants representing utilities and the nuclear industry. The Commission took note of the NRDC filings and the responsive filings by other participants, considering them part of the record, and in its November 6, 1981 Second Prehearing Memorandum and Order asked the participants to address the significance of commercial reprocessing to the Commission's decision in the waste confidence proceeding. In response, the participants addressed this change in government policy in their prehearing statements filed in December 1981.

In response to those who argued that the change of reprocessing policy invalidated DOE's position, DOE stated that the program for development of the technology is not dependent on the waste form. Moreover, DOE pointed out that the purpose of this proceeding—"to determine whether there is at least one safe method of disposal or storage for high-level radioactive waste" is not changed by this Administration's support of reprocessing of spent fuel (DOE PHS pp. 2–3). Some participants who agreed with DOE commented that spent fuel disposal involves greater difficulty than disposal of solidified reprocessing waste because of its higher radioactivity and less easily handled form; in addition, they asserted that the removal of the uranium and most actinides by reprocessing would ease the requirements for safe long-term storage and simplify the waste disposal problem (UNWMG–EEI PHS p. 16; SE2 PHS p. 4). Others contended that spent fuel is a more difficult waste form because heat dissipation and packaging problems involved in disposal appear to be more severe than in disposal of solidified reprocessing waste (AIF PHS p.6; ANS PHS p. 5).

The Commission recognizes that the proceeding has been primarily concerned with storage and disposal of spent fuel. However, the Commission does not believe that the possibility of future reprocessing, and the potential need to dispose of high-level radioactive waste resulting from reprocessing, significantly alters the technical feasibility or the schedule for developing a mined geologic repository and the design of its multiple barriers.

With regard to technical feasibility, the effect of spent fuel reprocessing on the commercial radioactive waste disposal problem is not a new consideration. The disposal of waste from reprocessing spent fuel has been studied for a longer time than the disposal of spent fuel. Until 1977, the commercial waste management program was directed primarily toward disposal of waste from spent fuel reprocessing, and those efforts have continued. A variety of waste forms has been studied (DOE PS pp. II–153 to II–160). Thus, considerable information is already available on the technical feasibility of developing a suitable waste form for reprocessed high-level radioactive waste. In fact, there is evidence that the disposal of reprocessed high-level waste may pose fewer technical challenges than the disposal of spent fuel (Tr. p. 29). Moreover, commercial reprocessing of spent fuel cannot be undertaken in this country in the absence of a full NRC licensing review. That review will consider, among other things, the waste form to be produced by the reprocessing method and its implications for waste disposal. Unless the Commission determines that commercial reprocessing and management of its products assure adequate protection to the public health and safety and the common defense and security, spent fuel will continue to be the predominant commercial waste form available for disposal in a repository.

With regard to the impact on DOE's repository schedule, the Commission recognizes that DOE's waste package development program will eventually be affected to some extent by the nature of the waste form under development. However, the direction taken in research and evaluation of materials being conducted in the DOE program is expected to produce results which would be relevant to the waste package design, regardless of which waste form is used (DOE PS pp. II–141 to II–152, CS pp. II–96 to II–100). Moreover, the choice of waste form will not significantly affect other elements of the DOE repository program. The storage and disposal of reprocessed waste would involve substantially the same problems as those being addressed for spent fuel, and a change in waste form would not alter the site-selection program or the program for development of suitable engineered barriers (DOE PHS p. 3). Thus, DOE's program is proceeding on a basis that would permit the disposal of either high-level waste or spent fuel. This approach is consistent with the recommendations of the Interagency Review Group in its March 1979 report to the President (IRG Final Report, p. 73) and with the direction in the Nuclear Waste Policy Act of 1982 (Sec. 111(a)(2)). Finally, as noted above, any decision to permit the commercial reprocessing of spent fuel will include consideration of the reprocessed waste form and its implications for waste disposal. For these reasons, the Commission concludes that the possibility of commercial reprocessing does not substantially alter the technical feasibility of, or the schedule for, developing a suitable waste package.

The Commission concludes that the basic knowledge of spent fuel and high-level waste and its behavior in a repository environment, together with DOE's ongoing development and testing program, are sufficient to provide assurance that a waste package can be developed that will provide adequate containment until the potential hazard from the fission product activity is sufficiently reduced.

C. The Development of Effective Engineered Barriers for Isolating Wastes From the Biosphere

1. *Backfill Materials.* In DOE's conceptual design, one engineered barrier consists of backfill materials for filling voids between canister, overpack, sleeve and host rock. The materials are chosen to retard radionuclide migration. The task is to design and test barrier materials which will be effective for very long periods of time. Candidate materials include bentonite, zeolites, iron, calcium or magnesium oxide, tachyhydrite, anhydrite, apatite, peat, gypsum, alumina, carbon, calcium chloride, crushed host rock, and others (DOE PS p. II–147). Host rock or other materials would also be used to backfill drifts and shafts within the repository.

The California Department of Conservation (CDC) contends that repository shaft and borehole backfill material performance may be degraded as a result of increased temperature and other factors (CDC PS pp. 19–22). However, the expected temperature rise in the shaft backfill material will be only about 10 Farenheit degrees, and will cause no significant degradation of the shaft backfill material (DOE, PS p. II–347 Ref. 527 NUREG/CR 0495). Other participants believe that there is inadequate information to permit development of long-lived engineered barriers that will effectively contain high-level radioactive wastes (NRDC PS pp. 18, 32; I11 PS pp. 3–4; NECNP PS p. 18). CDC further contends that at this time, no information appears to have been developed that specifies the best type of backfill material to be used in particular geologic media (CDC PS pp. 19–22). However, the choice of backfill must take into account the rock media at the selected site as well as the waste package material. Thus, the backfill cannot be selected until a repository site has been selected. The NWTS program has as its objective, providing information on a practical range of options for backfill materials. Although a considerable amount of work remains to be done, an active research and development program on backfill materials is underway (DOE PS p. II–147). Further, that program is providing information to evaluate the backfill material options, as well as to establish a basis for selection of a suitable material for the geologic media being

considered. The Commission believes that this approach provides an adequate basis for concluding that effective backfill materials will be identified in a timely fashion.

In the National Waste Terminal Storage program a wide range of candidate backfill materials have been and are continuing to be evaluated (DOE PS II–129 to II–152). The DOE studies include measurements of the appropriate properties of backfill material including nuclide sorption capacities, capability to prevent or delay ground water flow, thermal conductivity, mechanical strength, swelling, plastic flow and methods of backfill emplacement. Data on available candidate materials show significant radionuclide sorption capabilities and sorptive properties can be maintained at elevated temperature and in the presence of radiation (DOE CS pp. II–98, II–99). Analyses indicate that several of the materials could provide adequate performance characteristics (DOE PS, Part II, Ref. 339, 340, 346, 372, 374, 376). As an example of the development of effective engineered barriers, the results of Swedish studies on radionuclide release in a repository were cited. The studies showed that a bentonite clay backfill, in conjunction with a thick copper canister (with spent fuel inside) could prevent the release of radionuclides to the host rock in the presence of granitic ground water for thousands to hundreds of thousands of years. In the Swedish experiments, the clay barrier provided sorptive properties which were predicted to delay the breakthrough of various radionuclides for thousands of years and also served to chemically condition the ground water, reducing its corrosive effect on the canister (DOE PS pp. II–145, II–148). The use of certain clays to retard the transport of radionuclides released by the waste package is applicable to repository designs here in this country. While DOE has not proposed using thick copper canisters as employed in the Swedish studies, this example of a durable combination of waste package and backfill material which was demonstrated to be effective in isolating radionuclides for very long times, indicates that the basic approach is reasonable. The use of clays, combined with other appropriate materials, could provide an effective means for radionuclide retardation and corrosion control.

In sum, the Commission believes that DOE's ongoing developmental studies reported in this proceeding (DOE PS pp. II–129 to II–152) are technically sound and provide a basis for reasonable assurance that engineered barriers can be developed to isolate or retard radioactive material released by the waste package.

2. *Borehole and Shaft Sealants.* A major factor in repository performance is the effective sealing of boreholes and shafts during repository closure operations. All penetrations provide potential pathways for radionuclides to reach the biosphere or for ground water to enter the repository. The penetrations must be sealed for an extended period of time. Further, the geology and hydrology at a particular site, as well as the expected temperature and pressure conditions during repository lifetime, must be understood in order to make a proper choice of the borehole and shaft sealing materials and to develop effective borehole and shaft seals.

Some participants concluded that current information concerning the technology for the sealing of the boreholes and shafts is inadequate. They also questioned the capability of the DOE program to develop sufficient information to allow effective seal design (CDC PS pp. 19–22; NRDC PS p. 5). The views of several participants who expressed concern about sealing were reflected in the comments of CDC. The Commission's response to each of the points raised by CDC on borehole and shaft sealing issues is discussed below.

CDC indicated that since long-term effects of heat and radiation on seal materials were not a factor in past oil and gas borehole sealing experience, such experience is not applicable to repository sealing.[3] However, at distances of more than several feet from waste canisters emplaced in a repository, radiation exposures are small and the temperature rise at seals in the shafts and boreholes is insignificant for sealing purposes (DOE CS II–108).

CDC also believes that the tests of cement seals with epoxy resins in bedded salt deposits discussed by DOE are insufficient to provide assurance of seal stability over a period of 10,000 years, especially when the effects of higher temperature and radiation are not included. As noted above, temperature and radiation effects on seals are expected to be negligible.

While these tests may not provide conclusive proof of performance for 10,000 years, they are expected to provide useful information for seal development.

CDC states that the results of field tests described by DOE as continuing over the next few years will not be completed in time to contribute to seal design criteria which are to be completed [4] in 1982. However, the final seal design for the selected site is scheduled for two years after a site is selected (DOE PS p. II–184). Testing up to that date is expected to be useful in designing an effective seal.

CDC questioned whether tests of waste package system component interactions with the surrounding media in bedded salt described by DOE will be completed in time for location of a repository. However, the Commission finds no basis for this assertion in the record. The DOE program appears to be adequately addressing this issue. Studies are in progress to characterize further the interactions between candidate backfill-getter materials and waste container alloys. These studies include investigations of dry rock salt/metal interactions and high intensity radiation/salt/brine/metal interactions. (DOE PS p. II–149, II–150).

CDC asserts that DOE has not discussed designing backfill material and penetration seals to allow for safe reentry if retrieval should become necessary. However, the provision to retrieve high-level waste and spent fuel for a number of years after the repository is filled has been addressed by DOE (DOE PS pp. II–280 to II–283). Although it has not yet been established whether backfilling and sealing will be conducted before repository closure, these operations may be reserved until a final decision for closure is made. In any event, CDC provides no basis for concluding that providing for retrievability will necessarily create any major difficulties for the design of backfill material and penetration seals.

According to one participant, "There is no established way to seal a repository so as to prevent radionuclide release to the biosphere for the necessary period of time. DOE has termed the sealing problem a 'key unknown' but there is no consensus that the technology which is currently anticipated will provide adequate seals for even a few decades" (Consolidated States Group PHS p. 8). Other participants maintained that seals must perform as well as the host rock in preventing radionuclide migration (NRDC PS p. 55). The DOE position is that the seal should provide a barrier with sufficient integrity to ensure acceptable consequences and sealing adequacy should be determined only on a site-specific basis (DOE CS p. II–106). DOE asserted that its program will successfully resolve remaining uncertainties in repository sealing technology (DOE CS pp. II–106 to II–109).

DOE has been studying cement-based borehole plugging and has examined use of grout materials for application to the Waste Isolation Pilot Plant (WIPP) and other potential repository sites. Earth-melting technology for plugging in salt and use of compacted natural earth

[3] The Commission notes that the extensive oil and gas borehole sealing experience has not been concerned with very long-term sealing. Therefore, DOE's sealing research and development must provide a basis to extend that experience for the development of long-term seals for a repository.

[4] DOE has published "Schematic Designs for Penetration Seals For a Reference Repository In Bedded Salt," ONWI–405, November, 1982.

materials are also being investigated (DOE PS p. II–183, CS p. 106–109). There is a considerable body of experience in sealing subsurface formations in the oil, gas, and other mineral extraction industries. However, related industrial experience and requirements for sealing a repository differ in one important respect: repository sealing must be effective for a very long time while most other sealing applications are for relatively short time periods (DOE PS p. II–182). Future DOE effort will be needed to verify borehole seal performance and durability for each candidate medium. An important aspect of DOE's work is to determine the rate of degradation of seal performance as a function of time. DOE plans to determine seal performance specifications for a particular site on the basis of calculated predictions of radionuclide release and transport to the accessible environment (DOE PS p. II–182). These predictions are expected to indicate that a site whose characteristics for waste isolation are clearly superior may not require sealing performance specifications as stringent as those for a less favorable site.

Based upon the extensive experience with shaft and borehole sealing in other industries and DOE's detailed program for evaluating the long-term performance of seals, the Commission believes that there is a reasonable basis to expect that long-term effective borehole and shaft seals can be developed.

D. Summary of Views on the Technical Feasibility of Safe Waste Disposal

The Commission notes that participants in the Waste Confidence Rulemaking proceeding have generally agreed there are no known fundamental technical problems which would make safe waste disposal impossible. Where they differ is the extent to which the technical problems of disposal technology and siting have already been solved and the capability of DOE to solve them, and particularly to solve them by 2007–09 or by the expiration date of reactor operating licenses (e.g., NY PS p. 3; NECNP PS p. 171; Minn PS pp. 13–20 of Enclosure).

The Commission believes that the record provides a basis for reasonable assurance that the key technical problems can be solved. Technically acceptable sites exist and can be found among the various types of geologic media and locations under investigation by DOE. Currently developed geophysical methods for site evaluation appear capable of adequately characterizing the site, and the residual uncertainties in earth sciences data do not seem to be an insurmountable impediment. Further, the Commission believes that the multi-barrier approach to waste package design is sound and that package development is being adequately addressed by DOE. DOE's development work on backfill materials and sealants provides a reasonable basis to expect that backfill materials and long-term seals can be developed. Reprocessing of spent fuel would only become a licensed commercial activity if disposal of reprocessing waste in a mined repository would be established as technically feasible. While the Commission recognizes that more engineering development and site-specific work on disposal technology will have to be conducted before a waste repository can be constructed and operated, the Commission concludes that it is technically feasible to safely dispose of high-level radioactive waste and spent fuel in a mined geologic repository.

2.2 Second Commission Finding

The Commission finds reasonable assurance that one or more mined geologic repositories for commercial high-level radioactive waste and spent fuel will be available by the years 2007–09, and that sufficient repository capacity will be available within 30 years beyond expiration of any reactor operating license to dispose of commercial high-level radioactive waste and spent fuel originating in such reactor and generated up to that time.

While the record of the proceeding supports a finding that disposal is technically achievable, the Federal government has, in the past, made inadequate progress in developing sound waste management policies and programs. The Commission notes that DOE has stated in its April 1984 draft Mission Plan that the first repository will begin operations in 1998, and that the second will start up in 2004. However, it is recognized that both technical and institutional issues contribute to uncertainties concerning DOE's ability to complete one or more mined geologic repositories for high-level radioactive waste by those dates. The technical issues concern DOE's ability to find technically acceptable sites in a timely fashion and the timely development of waste forms, packages, and engineered barriers. The institutional issues concern primarily Federal-state relations and the management and funding of the Federal program.

The Commission has considered the effect of enactment of the Nuclear Waste Policy Act of 1982 and concludes that the Act helps to reduce these scheduling and institutional concerns. The Act provides support for timely resolution of technical uncertainties by: (1) Establishing specific milestones for all the key tasks; (2) coordinating the activities of all the involved Federal agencies; (3) providing for time schedules and a mission plan for the accomplishment of the tasks; and (4) providing a mechanism for monitoring progress, for identifying failures to meet the schedules and the milestones, and for adjusting the future elements of the program in the event that such failures occur. In order to further enhance the resolution of technical uncertainties regarding rock thermal-geomechanics the Act provides for the establishment of a Test and Evaluation facility to carry out *in-situ* studies of rock at repository depth. The Act also reduces uncertainties in the institutional arrangements for the participation of affected states in the siting and development of repositories and in the long-term management, direction and funding of the repository program. The Commission's assessment of both the technical and institutional factors is discussed below.

A. Technical Uncertainties

The ability to construct and operate a mined geologic repository that will provide for the safe disposal of high-level radioactive waste and spent fuel by the years 2007–09 has been challenged by several participants. In addition to the institutional issues which must be resolved, interrelated technical problems have to be solved in a coordinated and timely fashion. The Department of Energy is confident the technical problems can be solved as scheduled in the National Waste Terminal Storage Program plans (DOE PS p. III–88, CS p. III–13; DOE draft Mission Plan, April 1984). Other participants conclude that because of unresolved technical problems, DOE's schedule cannot be met (e.g., Consolidated Public Interest Group PHS pp. 2–7; Consolidated State Group PHS pp. 1–13). For convenience, we consider the technical controversy in two categories: (a) finding technically acceptable sites in a timely fashion, and (b) the timely development of waste packages and engineered barriers.

1. *Finding Technically Acceptable Sites in a Timely Fashion.* To assure the adequacy of a candidate site requires extensive onsite investigations including drilling or excavating, as well as analyses and technical evaluations. Although DOE has not yet begun subsurface site characterization to enable identification of an acceptable site, the record does indicate that DOE's site screening and selection program is providing information on site characteristics at a sufficiently large number and variety of sites and geologic media to support the expectation that one or more technically acceptable sites will be identified.

DOE is investigating four geologic media at a number of sites: domed salt (Gulf Interior Region); bedded salt (Paradox Basin, Permian Basin, Salina Basin); basalt (DOE's Hanford Site), and

volcanic tuff (DOE's Nevada Test Site). Investigations in a fifth media (granite) are planned, but sites have not yet been determined (DOE PS Appendix B). Exploratory shaft excavation at three sites in different geologic media was to begin for basalt in April, 1983, for volcanic tuff in October, 1983, and for salt in December, 1983 (Tr. pp. 241–242) However, the Nuclear Waste Policy Act of 1982 (NWPA) imposed new conditions which made it necessary to revise this schedule. The NWPA specified that DOE had to prepare environmental assessments for each of five nominated sites, from which three sites would be recommended to the President for characterization. DOE's preparation of environmental assessments and recommendation of three sites were to be accomplished in keeping with the provisions of the repository siting guidelines required by the NWPA. The Commission's concurrence in DOE's siting guidelines on July 3, 1984, enables DOE to proceed to nominate and recommend repository sites for characterization. DOE has recently published a revised schedule for site selection milestones in its April, 1984 draft Mission Plan. As described in its Mission Plan, the current status of DOE's site selection schedule calls for the issuance of environmental assessments for five nominated sites and the recommendation of three of those sites for characterization by December, 1984. DOE's schedule for work in the various geologic media is summarized below.

Salt: Resolution of the identified key screening issues in FY 1984 is expected to permit nomination of a candidate salt dome site in December, 1984. DOE is still choosing from among several salt domes in the Gulf Coast interior region (Tr. pp. 243–244; DOE Draft Mission Plan, April, 1984). For bedded salt, primary effort has been focused on the Palo Duro Basin in Texas, the Paradox Basin in Utah, and the Permian Basin, particularly the Delaware basin in the Los Medanos area, the site considered for the proposed WIPP. The Bureau of Land Management issued the report "Environmental Assessment of DOE Proposed Location and Baseline Studies in the Paradox Basin, Utah-Final" UT–060–51–2–11, in July, 1982. Each of the seven potentially acceptable salt sites has been evaluated for environmental conditions, and a site characterization plan is expected to be issued for salt in September, 1985. DOE will start land access and permitting activities for salt after negotiating agreements with affected states and Indian tribes (DOE Draft Mission Plan, April, 1984).

Basalt: The basalt formations at the Hanford reservation in the center of the Pasco basin (Columbia Plateau, central Washington) are prime candidates for repository sites. DOE expects to issue a site characterization plan for basalt in January, 1985 and start drilling for the exploratory shaft in March, 1985 (DOE Draft Mission Plan, April 1984).

Volcanic Tuff: The Nevada Test Site offers several suitable candidates for waste repository siting. The primary focus is welded tuff on Yucca Mountain, where DOE has begun a program of drilling and geophysical evaluation. DOE expects to issue site characterization plan for tuff in March, 1985 and begin shaft work in September 1985 (DOE Draft Mission Plan, April 1984).

Granite: Granite and other crystalline rock media are being considered for the second repository (DOE Draft Mission Plan, April 1984). DOE has conducted only limited investigations of granite at the Nevada Test Site (DOE PS pp. B–66, B–72), but is developing data on the potential of granite as a repository medium in collaboration with Swedish investigators (DOE PS p. II–258). This project has already produced a large amount of rock thermal-mechanics data at repository depth for use in repository designs in granite media in this county (DOE PS pp. II–258 to II–280).

As indicated in our discussion of technical feasibility, the identification of technically acceptable sites is a key problem and the date of successful solution of this problem is a critical milestone in the repository program. Those participants who believe DOE could not meet its site selection schedule asserted that determination of the acceptability of proposed repository sites requires information that will not be available when needed. They maintained that DOE's knowledge is seriously incomplete with respect to all of the potential sites considered to date. Further, they asserted that because new information could disqualify any of the potential sites, as it did at the Palestine dome, there is, as yet, no basis for reasonable assurance that an acceptable repository site will be available in the time period under consideration (NRDC PS p. 44; NECNP PS p. 24). The Commission recognizes that if the DOE program were further along, e.g., in the middle of exploratory shaft work, there would be much more site-specific information available (including the results of *in-situ* tests) and a firmer basis for assessing whether DOE's revised schedule can be met. However the Commission can make a reasonable prediction with the information now before it.

Underlying the pessimism of some participants is apparently a belief that DOE's past record in solving technical problems undermines the possibility of finding confidence in DOE's ability to solve the waste disposal problems in a timely way. The Commission acknowledges that in the past the waste programs of DOE and its predecessor organizations have experienced difficulty in making timely progress toward a solution of the nuclear waste problem. However, the Commission need not rely on this past record in making its confidence determination. The DOE program is now adequately addressing the issues yet to be resolved in identifying an acceptable site and DOE's schedule is a reasonable one (see the discussion in Section 2.2 B.4 of this document). The qualifications and professional experience of the many scientists and engineers on the overview committees and peer review groups who advise and consult on the DOE program should provide confidence in DOE's efforts (DOE CS Appendix D). The support of the USGS in the earth sciences field (USGS PS Appendix A) clearly contributes to confidence that the technical problems associated with identifying an acceptable repository site will be solved. As noted before, no fundamental technical breakthroughs are necessary. Rather, completing the program is a matter of step-by-step evaluation and development based on ongoing site studies and research programs.

The Commission believes that the enactment of the Nuclear Waste Policy Act of 1982 provides impetus to that program and helps ensure that it will be completed on a schedule consistent with the Commission's findings. The Nuclear Waste Policy Act establishes a detailed step-by-step plan for developing a waste repository. The Act directs DOE to prepare a comprehensive Mission Plan which will establish programmatic milestones for research, development, technology demonstration and systems integration. The Act also requires the various Federal agencies involved in the program to coordinate their activities. Involved agencies must report their progress, or lack thereof, to Congress, explain any slip in schedule and set a new schedule for activities. Thus, the Act provides a framework and schedule for developing a repository.

The schedule set forth in the Act calls for the identification of adequate sites in time to meet the final decision date on construction authorization by the NRC and well before the time at which such action would be necessary to assure repository operation within the time period discussed in this decision. The time between sinking of an exploratory shaft and the completion of site characterization contemplated by the Act (Sec. 112, 114) is 26 months, with an extension to 38 months under certain conditions; the DOE schedule for these activities is generally compatible with this schedule (see Section 2.2 B.4 below).

The Nuclear Waste Policy Act also puts in place procedures (Sec. 115, 116, 117, 118, 119) which the Commission

believes will help to resolve potential institutional problems that might affect the schedule for site selection. These are discussed in detail hereafter. The Commission believes that the provisions of the Act should also provide resources (Sec. 302, 303) to adequately fund the site selection and characterization work.

Given all of these considerations, the Commission concludes that there is reasonable assurance that technical uncertainties—unsolved technical problems and information gaps—will be removed in time for DOE to meet its proposed schedule. DOE's program is adequate and its schedule is reasonable. The Act provides a greater degree of confidence than existed previously that site selection will proceed within the general time frame that DOE has described in its position statement.

2. *Timely Development of Waste Packages and Engineered Barriers.* Some participants have expressed strong reservations concerning DOE's ability to develop waste forms, packages, and engineered barriers in a timely fashion. The DOE technical effort to solve problems was characterized as only just being defined in many significant areas, including the prevention of corrosion of waste canisters (NRDC PS p. 18). Other participants contended that: the design and evaluation studies of penetration seals and backfill material might not be completed soon enough to meet the goal of achieving an operational repository by 1997 to 2006; the long-term effects of heat and radiation on the integrity of the seal materials are not known; tests of cement seals with epoxy resin in bedded salt deposits are insufficient to assure stability of such seals over a period of 10,000 years; and field tests of liquid permeability during a period of three months cannot provide confidence concerning the stability of seals during a period of 10,000 years. Participants also contended that no information had yet been provided which specified the type of backfill material most suitable for specific geological media and capable of withstanding thermal stress (CDC PS pp. 19–22).

Although technical problems associated with the development of waste packages and engineered barriers could delay DOE's schedule, DOE believes that the uncertainties surrounding the waste package would be resolved or bounded as a result of implementation of its program (DOE PS p. II–160, CS p. II–96). The DOE Waste Package Program Plan (ONWI–96) which was issued in August 1980, updated in June 1981 (NWTS–96) and updated further in DOE's April, 1984 Draft Mission Plan, sets forth details of DOE's program. Waste package performance criteria will be developed in the near future. Final action on the criteria will be contingent upon the final issuance of NRC's technical criteria (10 CFR Part 60, Subpart E), the publication of the relevant regulatory guides on waste packages, and the ONWI–33 series of criteria documents, i.e., the reports DOE/NWTS–33 (1), (2), (3), "NWTS Program Criteria For Mined Geologic Disposal of Nuclear Wastes."

Earlier, DOE had planned to complete the waste package preliminary designs for salt in September 1982, for basalt in June 1985, for tuff in June 1984, for granite in September 1984, and for argillaceous rock in December 1984, and to establish a baseline for waste form specifications by June 1983 (ONWI–96). According to DOE's April, 1984 draft Mission Plan, the current reference canister material for basalt is carbon steel. Alternative materials include an iron-chromium-molybdenum alloy, copper and a copper-nickel alloy. On the basis of preliminary corrosion-test results, carbon steel has also been selected as the reference canister material for salt. The titanium alloy Tricode 12 has been designated as an alternative material. Type 304L stainless steel has been identified as the reference container material for tuff; other austenitic stainless steels, Inconel and copper are alternatives. Waste-package conceptual designs have been developed for basalt, salt and tuff. (The conceptual design for tuff is based on saturated conditions; a conceptual design for the unsaturated zone will be available in late FY 84 [DOE draft Mission Plan, April 1984]).

Tests with spent fuel and borosilicate glass have been initiated under site-specific conditions for basalt, salt and tuff. Preliminary waste acceptance requirements have been developed for basalt and salt. In addition, for salt media, interim waste-acceptance requirements for borosilicate glass and draft waste acceptance requirements for spent fuel were prepared in FY 83. Preliminary requirements for tuff will be prepared in FY 84. DOE intends to submit the baseline waste form specifications developed during the conceptual design studies for acceptance by NRC. The specifications will be subjected to configuration control for application throughout the waste processing and disposal program.

According to the DOE Draft Mission Plan the complete waste package performance model will be verified and validated by September 1989. Further, the program plan calls for completion of the waste package final design that takes into account the selected site environmental conditions, after completion of in-situ testing in FY 89 and FY 90. Packing material is included in the reference waste package only for basalt. The reference packing material for basalt is a mixture of crushed basalt and sodium-bentonite clay. Ongoing physical property testing of reference packing material is expected to be completed in FY 87 and ongoing radionuclide sorption, solubility and diffusion testing are to be completed by September, 1989.

Some participants' statements are pessimistic assessments based on the fact that the DOE program has not yet reached the critical milestones—e.g., establishment of waste form specifications, completion of waste package preliminary designs, verification of a waste package performance model, and qualification of barrier materials. However, the Commission believes that these technical problems will be solved without delaying a repository schedule. DOE has put in place an extensive nuclear waste research program that addresses each of these technical problems. Research results already reported on waste form packaging and barrier materials indicate that these research efforts, although not yet completed, can reasonably be expected to provide solutions to those problems when those solutions are needed to meet the DOE schedule (DOE PS pp. II–129 to II–197, CS pp. II–93 to II–100).

The Commission's positive assessment is strengthened by provisions in the Nuclear Waste Policy Act of 1982. Title II of the Act authorizes DOE to undertake steps leading to the construction, operation and maintenance of a deep geologic test and evaluation facility and to establish a focused and integrated research, development and demonstration program. In the area of waste package design, the Act directs that DOE's Mission Plan identify a process for solidifying high-level radioactive waste or packaging spent fuel with an analysis of the data to support selection of the solidification process or packaging technique. The Act calls for a schedule for implementing such a plan and for an aggressive research and development program to provide a high-integrity disposal package at a reasonable price (Sec. 301(a)(6)). The Commission notes that DOE's published Draft Mission Plan (April, 1984) addresses these issues in detail. Congressional authorization of those programs, together with the assurance of necessary funding, provides the Commission additional confidence that the required research work will be done in a timely manner.

The Commission also notes that the programs to solve the major technical problems relating to the timely development of waste forms, waste packages, and engineered barriers can proceed in parallel. Because the waste repository must be designed as a system, the problems are interrelated; however, the relationships are such that

solving one problem need not await the solution of another. DOE could proceed for a number of years on waste package development before making a decision on the form of the waste, without affecting the repository availability schedule.

B. Institutional Uncertainties

The principal institutional issues that affect the schedule for availability of a mined geologic repository include: measures for dealing with Federal-state disputes; an assured funding mechanism that will be sufficient over time to cover the period for developing a repository; an orginizational capability for managing the high-level waste program, whether this be DOE or a successor organization; and a firm schedule and establishment of responsibilities which will lead to repository development in a reasonable period of time. Each of these is discussed in turn.

1. *Measures for Dealing with Federal-State-Local Concerns.* The President and Congress have recognized the need to involve state and local governments in the decision-making process and have taken steps, including enactment of the Nuclear Waste Policy Act of 1982, to establish an institutional framework to accomplish this end. DOE pointed out that Presidents Carter and Reagan have considered state involvement in site selection an important aspect of the high-level radioactive waste disposal program. President Carter, in his message to Congress, directed "the Secretary of Energy to provide financial and technical assistance to States and other jurisdictions to facilitate full participation of State and local government in review and licensing proceedings." He committed the Federal Government to work with state, tribal and local governments in the siting of high level waste repositories. Within a framework of "consultation and concurrence," a host state would have a continuing role in Federal decision-making involving the siting, design and construction of a high-level waste repository (DOE CS pp. II–11, 13–14). President Reagan's statement of October 8, 1981 similarly instructed DOE to work closely with industry and state governments in developing methods of storing and disposing of commercial high-level waste.

Although industry groups believed that DOE had made substantial progress in cooperating with state and local authorities by encouraging their direct participation in planning and preliminary site selection activities (UNWMG–EEI CS pp. V–27, V–28), states and environmental groups were skeptical that the mechanisms proposed by DOE for incorporating state and local views (e.g., consultation and concurrence) would work satisfactorily. Many states asserted a lack of confidence in DOE's claims that it would be able to gain agreement from states by persuasive measures (e.g. Ohio PS p. 5; NY PS p. 74; Wis PS Kelly p. 5) and noted that information sharing was inadequate to reduce or overcome a state's resistance to a repository (e.g., NY PS p. 74; NRDC PS p. 69). The states also believed that DOE had underestimated potential state and local opposition to the siting of a repository (CEC PS p. 27, Ohio PS p. 12) and that consultation and concurrence must include a mechanism for resolving intergovernmental disputes (Vt PS p. 3). Other participants argued that many states had already imposed bans on waste disposal (NECNP PS p. 32) and that DOE had presented no means for resolving state nonconcurrence (NRDC PS p. 69). Still others claimed that the state's role in the site selection process must be specifically defined (Del PS p. 6); but the DOE had provided no basis for optimism that this could be done (NECNP PS p. 69). Some participants suggested that local opposition to waste repositories could be overcome by providing financial compensation to nearby communities (AIChE PS p. 6) but that DOE had not adequately considered compensation to host communities for socioeconomic impacts (Ohio PS p. 14).

The recently-enacted Nuclear Waste Policy Act of 1982 defines the roles of the states and Indian tribes in repository site selection, and thereby reduces some of the uncertainties in settling disputes between the Federal government and affected states and Indian tribes. By providing for information exchange, for financial and technical assistance, and for processes of consultation, cooperation, negotiation and binding written agreement, the Act should help to minimize the potential for more formal objections and confrontations.

Specifically, the Act requires DOE to identify the states with one or more potentially acceptable sites for a repository and to notify the governing bodies of the affected states or Indian tribes of those sites (Sec. 116(a)). The Act establishes detailed procedures for consultation with the states and Indian tribes regarding repository sites selection (Sec. 117). DOE, NRC and other agencies involved in the construction, operation, or regulation of any aspect of a repository in a state must provide to the state and to any affected Indian tribe, timely and complete information regarding plans made with respect to the site characterization, development, design, licensing, construction, operation, regulation, or decommissioning of such a repository (Sec. 117(a)(1)). If DOE fails to provide such information requested by the state or affected Indian tribe in a timely manner, it must cease operations at the site (Sec. 117(a)(2)). The Act also provides that DOE must consult and cooperate (Sec. 117(b)) with the affected states and Indian tribes and must enter into a binding written agreement (Sec. 117(c)) setting forth the procedures under which information transfer, consultation and cooperation is to be conducted.

Following consultation with affected states and Indian tribes, the Secretary of Energy is to recommend to the President three sites suitable for characterization as candidates for selection as the first and second repositories (by July 1, 1985 and July 1, 1989 respectively) (Sec. 112(b), (B), (C)). The President must then submit to Congress his recommendation of sites qualified for construction authorization for a first and second repository (no later than March 31, 1987 and March 31, 1990 respectively) (Sec. 114(a)(2)(A)). Following submission by the President of a recommended site to Congress, the Governor or legislature of the state, or the Indian tribe in which such site is located may disapprove the site designation and submit (within 60 days) a notice of disapproval to Congress (Sec. 116(b)(2)). The site is disapproved unless Congress passes a joint resolution within 90 days to override the state or Indian tribe disapproval (Sec. 115 (c)). The Commission recognizes that the latter provision may create uncertainty in gaining the needed approvals of repository sites from the affected states or Indian tribes. Nevertheless, the Commission believes that, on balance, this Congressional action to establish a detailed process for state and tribal involvement in the development of repositories will reduce overall uncertainties by encouraging Federal-state cooperation and by limiting the potential for formal state or Indian tribe objections that could lead to disruption of project plans and schedules. This conclusion is consistent with the views expressed by state participants in this proceeding that a mechanism for state participation, including the resolution of state objections and nonconcurrences, is necessary for state cooperation and for progress in repository development (Tr. pp. 117, 119, 120). Further, the Act fixes the point in time at which a state may raise formal objections. Once that time has passed, this should reduce uncertainties at later stages.

The Act stipulates that DOE will reimburse costs incurred by affected states and Indian tribes in participating in the activities identified above. The Act provides that the Secretary of Energy shall make financial grants (Secs. 116, 118) to each state or affected Indian tribe notified by DOE that a potentially acceptable repository site exists within its jurisdiction. These grants are made to enable the state or affected Indian tribe to participate in the

review and approval activities required by the Act (Secs. 116, 117), or authorized by written agreement entered into with DOE. Further, DOE is to make financial grants (Secs. 116, 118) to each state or affected Indian tribe where a candidate site for a repository is approved, to enable the state or Indian tribe to conduct the following activities: (a) Review activities taken for purposes of determining impacts of such a repository, (b) develop a request for impact assistance, (c) engage in site monitoring, testing or evaluation, (d) provide information to its residents, and (e) request information. In addition, the Act specifies that financial assistance will be provided to mitigate any economic, social, public health and safety, or environmental impacts of the development of a repository. The Act also provides that state and local government units shall receive payments equal to the amount they would receive from taxing such site charaterization and repository development activities in the same manner that they tax other real property and industrial activities (Sec. 116). By providing a tangible benefit to those localities or Indian reservations where repository sites are being investigated, this provision should address one concern frequently expressed by state and tribal organizations, and may result in a more willing acceptance of a repository site.

In sum, the Commission believes that the provisions of the Nuclear Waste Policy Act of 1982 reduce uncertainties regarding the role of affected states and Indian tribes in repository site selection and evaluation, and minimize the potential for direct confrontation between the Federal government and the states or tribal organizations with respect to the disposal of commercial high-level waste and spent fuel. By reducing these uncertainties, the Act should help minimize the potential that differences between the Federal government and states or Indian tribes will substantially disrupt or delay the repository program. Further, as discussed previously in this Section, the decision-making process set up by the Act provides a detailed, step-by-step approach which builds in regulatory involvement. This should also provide confidence to states and Indian tribes that the program will proceed on a technically sound and acceptable basis.

2. *Continuity of the Management of the Waste Program.* The Commission recognizes that the waste disposal program involves activities conducted over a period of decades. Thus, there is a need for long-term stability of management and organization. The Commission's Second Prehearing Memorandum and Order of November 6, 1981, sought comments on the implications of the possible dismantling of the DOE and assignment of its functions to other Federal agencies. In response, DOE stated: "The ability of the Federal Government to implement the waste isolation program would not be affected by the President's September 24, 1981 proposal to dismantle DOE. As demonstrated by his Nuclear Policy Statement of October 8, 1981 . . . the President is committed to the swift deployment of means of storing and disposing of commercial high-level nuclear waste. Thus, some governmental unit will continue the program aggressively if DOE is dismantled" (DOE PHS p. 8). The DOE statement was amplified by the Deputy Secretary of Energy in the oral presentations on January 11, 1982: " . . . as far as the reorganization is concerned, the plan is not, I think, to do away with the activities of the Department of Energy. The plan, as it has been announced so far, is to in fact merge the activities, in particular, these activities into the Department of Commerce. And we do not visualize at this time any significant changes in the way in which the program relating to waste management would be altered, either technically or from a management point of view" (Tr. p. 13).

The nuclear industry participants agreed with DOE's view on this question (Consolidated Industry Group PHS p. 18; AIF PHS p. 7; SE2 PHS p. 6; ANS PHS p. 8, UG p. 2). However, state participants and intervenor groups disputed the DOE view. They saw the potential dismantlement of DOE as leading to further delay in resolution of the radioactive waste disposal problem and asserted that DOE's possible abolition made representations regarding the future success of its waste program useless (Consolidated State Group PHS, pp. 2, 9; Minn PHS pp. 6–8).

The Commission does not believe that the Administration's proposal to transfer the activities of the Department of Energy to the Department of Commerce introduces substantial new uncertainties regarding the continuity of Federal management of the nuclear waste program. As the Department of Energy stated, the Administration's proposal, if adopted, would simply transfer the nuclear waste program functions from one Federal agency to another. Moreover, Congressional action is needed to adopt the Administration's proposal. Yet, in the three years since the Administration's proposal to dismantle DOE was made, there has been no discernible action by the Congress to proceed with adoption of the proposal. Because the Congress has not taken action toward adoption of the Administration's proposal, and because the proposal, even if adopted, would consist of only a transfer of the program from one agency to another, the Commission does not believe that the Administration's proposal constitutes a significant source of management uncertainty for the nuclear waste program.

The Commission believes that residual uncertainties regarding the continuity of Federal management of the nuclear waste program have also been reduced by the Nuclear Waste Policy Act of 1982. The Act provides for the establishment of an Office of Civilian Radioactive Waste Management within the Department of Energy. This Office is to be headed by a Director appointed by the President, with Senate confirmation, who will report directly to the Secretary of Energy (Sec. 304). Further, the Act raises the activities of this Office to a high level of visibility and accountability by stipulating that an annual comprehensive report of the activities and expenditures of the Office will be submitted to Congress and that an annual audit of the Office will be conducted by the Comptroller General, who will report the results to Congress. The Act also requires two additional elements that provide added assurance of continuity: a "Mission Plan" and a schedule of activities for DOE. The Mission Plan is a detailed and comprehensive report which is intended to provide "an informational basis sufficient to permit informed decisions to be made in carrying out the repository program and the research, development, and demonstration programs required under this Act." The Secretary of Energy has already submited a draft Mission Plan to the states, the afffected Indian tribes, the Commission and appropriate government agencies for their comments; after revising the plan, DOE must submit it to the appropriate Congressional committees (Sec. 301 (a) and (b)). The schedule of DOE's activities in conducting this program was discussed in Section 2.2 A.1 above. Taken together, the provisions of the Nuclear Waste Policy Act establish a detailed management framework for the conduct of the repository program that should help ensure both sound management and continuity—whether the responsibility for the repository program is retained in DOE or is transferred to another Federal agency.

3. *Continued Funding of the Nuclear Waste Management Program.* There is general agreement among all participants that the program to develop a mined geologic repository for nuclear wastes will require more than a decade of effort at a total cost of several billion dollars. A steady source of funding will be needed to assure the timely success of the program. DOE pointed out that it would request an adequate level of funding for the National Waste Terminal Storage (NWTS) Program as stated in

the Department's Position Statement (DOE CS p. II–30). In addition, DOE stated that Congress' commitment to the commercial waste disposal program was demonstrated by the continuous increase in the level of funding since 1976. The funding level was increasd by more than a factor of 10 between 1976 and 1980 (DOE CS p. II–30). Some participants disagreed with DOE's optimism concerning the future availability of funds and pointed out the competing priorities for Federal funds could deprive DOE of the necessary resources (CDC PS p. 7; Lewis PS p. 9; NRDC PS p. 28; Tr. p. 203).

Congress passed a continuing resolution for FY 1983 funding of DOE's nuclear waste program at the level of $259.4 million. This is about $10 million more than DOE's earlier FY 1983 request of $249 million. Additionally, the Nuclear Waste Policy Act authorizes the Secretary of Energy to enter into contracts and collect a fee of 1 mill per kilowatt-hour of electricity generated by nuclear reactors in return for the Federal government's acceptance of title, subsequent transportation, and disposal of high-level radioactive waste or spent fuel (Sec. 302(a)(2)). In order to be able to use a Federal repository, the Act required the generator or owner of such waste or spent fuel to enter into a contract by June 30, 1983 or the date on which generation is commenced or title is taken, whichever occurs later (Sec. 302(b)(2)). The Commission must require the negotiation of such contracts as a precondition to the issuance or renewal of a license (Sec. 302(b)(1)(B)). The Commission notes that all such contracts have been executed. DOE testified in the January 11, 1982 hearing that it expected the funds collected under such a program would allow support of the DOE waste program at an initial level of $185 million. Under the program subsequently adopted by the Congress, these funds are to be placed into a nuclear waste fund to support DOE's repository program. The general approach prescribed by the Act is to operate DOE's nuclear waste program on a full cost recovery basis. In this regard, the Act provides that DOE must annually review the amount of the fees established to evaluate whether collection of the fees will provide sufficient revenues to offset the costs expected. In the event DOE determines that the revenues being collected are less than the amount needed in order to recover the costs, DOE must propose to Congress an adjustment to the fee to insure full cost recovery. The Act also provides (Sec. 302(e)(5)) that, if at any time, the monies available in the Waste Fund are insufficient to support DOE's nuclear waste program, DOE will have the authority to borrow from the Treasury. The Commission believes that the long-term funding provisions of the Act should provide adequate financial support for DOE's nuclear waste program.

4. *DOE's Schedule for Repository Development.* The DOE reference schedule described in its April, 1984 draft Mission Plan establishes the earliest date of repository availability as 1998 and delineates the logic and the period of activities that are deemed achievable under current program assumptions. While DOE acknowledges that contingency time is required in the schedule to accommodate such factors as institutional uncertainties, public hearings, or possible project reorientation, it believes that an appropriate amount of time has, in fact, been allowed in the reference schedule. Under the reference schedule, DOE expects that disposal facilities will be operational in 1998 (DOE draft Mission Plan, April 1984). DOE's updated repository development schedule specifies the critical milestones prior to commencing construction of the first repository as:

March 1985 (basalt), September 1985 (tuff), ——— —— (salt).	Commencement of exploratory shaft work* at three sites (three different media: salt, basalt and tuff).**
August 1990	Submission of application for authorization to construct the first repository.
August 1993	Construction authorization for the first repository.

* Including borehole drilling.

** An October, 1982 update of this information indicated that a pilot borehole was started in September 1982 for an exploratory shaft in tuff at the Nevada Test Site. In May 1982, DOE initiated work on surface preparation, construction of drilling pads and support buildings for the drilling operation at the BWIP basalt site. In January 1982, a borehole was begun at a point 300 feet from the BWIP planned exploratory shaft location to provide data for planning the shaft excavation. No exploratory shaft work has begun at the Paradox Basin bedded salt site. As noted in the siting discussion under the Second Commission Finding, the Nuclear Waste Policy Act of 1982 requires DOE to complete certain actions before site characterization. These include issuance of siting guidelines concurred in by NRC, preparation of environmental assessments, notification of state and affected Indian tribes where sites are located, and holding of public hearings in the vicinity of each site.

The Commission concurred in DOE's repository siting guidelines on July 3, 1984, enabling DOE to proceed to complete the other site selection tasks. The Commission notes that DOE's draft Mission Plan (April 1984) anticipated the completion of the siting guidelines by Mid-Summber 1984 and DOE revised its site selection schedule accordingly. Final environmental assessments for five nominated sites (including salt, basalt and tuff media) are to be completed in December 1984, at which time three of the five sites will be recommended for characterization.

NRC's construction authorization (under 10 CFR Part 60) would mark the end of the site selection process.

Some participants believe that DOE cannot have a waste disposal facility available by 2007. These participants concluded that DOE's slow progress in the past suggests that DOE may be unable to solve the many problems that will arise in the future and that DOE's schedule for repository development is unduly optimistic (e.g., Minn. PS p. 6; Ill. PS p. 2; OCTLA PS pp. 8–9; CDC PS p. 7).

One of the primary purposes of the recently enacted Nuclear Waste Policy Act of 1982 is "to establish a schedule for the siting, construction, and operation of repositories that will provide reasonable assurance that the public and the environment will be adequately protected from the hazards posed by high-level radioactive waste and such spent nuclear fuel as may be disposed of in a repository." (Sec. 111(b)(1)). The Commission recognizes that, if fundamental technical breakthroughs were necessary, it would not be possible for Congress to legislate their solution or specify schedules for their accomplishment. However, as discussed previously, such breakthroughs are not necessary. Rather, the remaining uncertainties are reflected in the need for step-by-step evaluation and development based on ongoing site studies and research programs. The Commission believes the Act provides means for resolution of those institutional and technical issues most likely to delay repository development, both because it provides an assured source of funding and other significant institutional arrangements, and because it provides detailed procedures for maintaining progress, coordinating activities and rectifying weaknesses. For these reasons, the Commission believes that the selection and characterization of suitable sites and the construction of repositories will be accomplished within the general time frame established by the Act, or within a few years thereafter.

The provisions of the Nuclear Waste Policy Act of 1982 that establish schedules for repository development are elaborate and allow for various contingencies. A number of steps are involved before NRC considers authorization of construction. DOE is to nominate five sites it believes suitable for site characterization for possible repository development (Sec. 112(b)). DOE is to recommend for site characterization three candidate sites to the President (Sec. 112(b)(1)(B); the President is to recommend one of the characterized sites to the Congress (Sec. 114(a)(2)(A)); the affected state or Indian tribe is given an opportunity to submit a notice of disapproval to the Congress (Secs. 115(b), (116)(b)(2), 118(a)); the Congress may overturn a state or Indian tribe's disapproval of the site by passing a resolution of approval (Sec. 115(c)); and, if Congress approves or no notice of disapproval is submitted by a state or Indian tribe, then DOE is to apply for construction authorization (Sec. 114(b).

DOE's revised reference schedule (DOE draft Mission Plan, April 1984) states that the application for repository construction authorization will be submitted to the Commission in August 1990. Under the terms of the Act the Commission is expected to reach a decision within 3 years of the application date, or by August 1993 (Sec. 114) (under certain conditions, extension

by 1 year would be permitted). If the NRC decision is favorable, the repository would be constructed and begin operation, according to DOE's "reference schedule," in January 1998. Earlier dates can be achieved if the Presidential review time is reduced, if DOE promptly files the construction authorization application, if NRC provides a construction authorization in less than 3 years, or if DOE constructs the repository in a shorter period than provided in its estimated schedule. However, it is prudent to assume that such a contraction of the schedule will not be realized.

The Nuclear Waste Policy Act of 1982 establishes "not later than January 31, 1998" as the date when DOE is to begin disposal of high-level radioactive waste or spent fuel (Sec. 302(a)(5)(B)). This is consistent with the current dates of the DOE schedules discussed above and with the detailed step-by-step milestones established by the Act. The schedule established by the Act would assure the operation of the first repository well before the years 2007–2009, i.e., the period of concern in the present proceeding.

Despite the delays in DOE's earlier milestones, the Commission believes that the program established by the Act is generally consistent with the schedule presented by DOE in this proceeding and that DOE's milestones are generally both realistic and achievable. Achievement of the scheduled first date of repository operation is further assured by other provisions of the Act which specify means for resolution of those institutional and technical issues most likely to delay repository completion. In addition to those provisions discussed previously, the Commission notes that the Act clarifies how the requirements of the National Environmental Policy Act are to be met (e.g., Secs. 113 (c), (d); 114 (a), (f); 119(a); 121(c)). The Act also requires that any Federal agency determining that it cannot comply with the repository decision schedule in the Act must notify both the Secretary of Energy and Congress, explaining the reasons for its inability to meet the deadlines. The agency must also submit recommendations for mitigating the delay (Sec. 114(e)(2)). These provisions of the Act, as well as those that support the technical program—the provisions for research, development, and demonstration efforts regarding waste disposal (Title II of the Act), increase the prospects for having the first repository in operation not later than the first few years of the next century.

The Commission also finds reasonable assurance that sufficient repository capacity will be available within 30 years beyond expiration of any reactor operating license to dispose of commercial high-level radioactive waste and spent fuel generated up to that time. The Nuclear Waste Policy Act of 1982 establishes Federal responsibility and a clearly defined Federal policy for the disposal of such waste and spent fuel and creates a Nuclear Waste Fund to implement Federal policy. The Act establishes as a matter of national policy that this responsibility is a continuing one, and provides means for the Secretary of Energy to examine periodically the adequacy of resources to accomplish this end.

The Commission notes that as of September 30, 1982, the generating capacity of all commercial nuclear power plants in the U.S. with operating licenses or construction permits was 131 electrical gigawatts (GWe) and the capacity of those under construction permit review was about 5 GWe (NUREG–0871, Vol 1, No. 4, p. 2, 8). DOE, in its letter of March 27, 1981 to the presiding officer of this proceeding, provided an estimate of 180 GWe for the capacity of operating LWRs in the year 2000. This value is significantly lower than the value (276 GWe) presented in DOE's 1980 position statement (DOE PS p. V–4) and lower than that (202 GWe) presented in the NRC's Generic Environmental Impact Statement on spent fuel handling and storage (NUREG–0575, Vol. 1, p. 2–4). The validity of the latter predictions has been affected by the cancellations of a number of proposed units during the past two years. The DOE 1981 estimate of 180 GWe in the year 2000 appears to be a reasonable estimate of the likely installed capacity at that time. On this basis, during the 40 years of operation of each plant, using as a realistic assumption a 60 percent capacity factor, the electrical energy generation would be about 4300 GWe-years. Assuming 38 metric tons of heavy metal (MTHM) is discharged for each gigawatt-year (IRG Final Report p. D–6; NUREG–0575, Vol. 1 p. 2–4) the total discharged spent fuel from these plants would likely be about 160,000 metric tons. The capacity of each proposed repository will depend on such factors as the thermal loading limit in waste emplacement, space limitations within the host rock, nuclear power generation capacity in the region to be serviced by the repository, and economy of scale considerations (DOE PS pp. III–70 to 79; IRG Final Report p. D–21). In its cross statement DOE's estimate that three to six repositories might be needed was based on the assumption that nuclear power generation capacity grows to 250 GWe by the year 2000 and remains at that level until 2040 (DOE CS p. II–53). The representative characteristics of each repository used by DOE were 2000 acres and a 40 to 100 kW/acre loading, corresponding to a repository capacity of about 70,000 to 170,000 metric tons of uranium, respectively (DOE PS p. III–76). Reflecting the reduction in nuclear power projections, DOE estimated in the January 1982 hearing that the ultimate reactor capacity would be about 200 GWe (Tr. p. 236). DOE then assumed a repository capacity of 100,000 metric tons and concluded that "between two and three" repositories would be needed (Tr. p. 237). To accommodate the 160,000 metric tons we have assumed, two repositories each with 100,000 metric tons capacity would appear to be sufficient.

Repository completion and operation at three-year intervals would result in having adequate capacity about three years after initial operation of the first repository (DOE PS p. III–86). As noted earlier, emplacement of spent fuel in the first repository should begin not later than the first few years of the next century. Thus, if the first repository begins to receive spent fuel in the year 2005, the second may begin operation as early as 2008, in which case all spent fuel would be emplaced by about 2026, assuming DOE's estimated receiving rates (DOE PS p. III–71) and operation of each repository as completed. Because the rate of waste emplacement during the first five years of operation would be about 1800 metric tons per year (DOE PS p. III–71), only 5400 metric tons would be emplaced in the first repository by the time the second began operation. This would satisfy the requirements of Section 114(d) of the Nuclear Waste Policy Act, i.e., the prohibition of emplacement of more than 70,000 metric tons in the first licensed repository before the second repository is in operation. If the DOE estimated emplacement rates (which would increase to 6000 metric tons/year after the first five years) are realized, it will take about 15 years to emplace 70,000 metric tons in the first repository.

For the foregoing reasons, the Commission finds reasonable assurance that one or more mined geologic repositories for commercial high-level radioactive waste and spent fuel will be available by the years 2007–09, and that sufficient repository capacity will be available within 30 years beyond expiration of any reactor operating license to dispose of commerical high-level radioactive waste and spent fuel originating in such reactor and generated up to that time.

2.3 Third Commission Finding

The Commission finds reasonable assurance that high-level radioactive waste and spent fuel will be managed in a safe manner until sufficient repository capacity is available to assure the safe disposal of all high-level radioactive waste and spent fuel.

Nuclear power plants whose operating licenses expire after the years

2007–09 will be subject to NRC regulation during the entire period between their initial operation and the availability of a waste repository. The Commission has reasonable assurance that the spent fuel generated by these licensed plants will be managed by the licensees in a safe manner. Compliance with the NRC regulations and any specific license conditions that may be imposed on the licensees will assure adequate protection of the public health and safety. Regulations primarily addressing spent fuel storage include 10 CFR Part 50 for storage at the reactor facility and 10 CFR Part 72 for storage in independent spent fuel storage installations (ISFSI). Safety and environmental issues involving such storage are addressed in licensing reviews under both Parts 50 and 72, and continued storage operations are audited and inspected by NRC. NRC's experience in more than 80 individual evaluations of the safety of spent fuel storage shows that significant releases of radioactivity from spent fuel under licensed storage conditions are extremely remote (see discussion in Section 2.4).

Some nuclear power plant operating licenses expire before the years 2007–09. For technical, economic or other reasons, other plants may choose, or be forced, to terminate operation prior to 2007–09 even though their operating licenses have not expired. For example, the existence of a safety problem for a particular plant could prevent further operation of the plant or could require plant modifications that make continued plant operation uneconomic. The licensee, upon expiration or termination of its license, may be granted (under 10 CFR Part 50 or Part 72) a license to retain custody of the spent fuel for a specified term (until repository capacity is available and the spent fuel can be transferred to DOE under Sec. 123 of the Nuclear Waste Policy Act of 1982) subject to NRC regulations and license conditions needed to assure adequate protection of the public. Alternatively, the owner of the spent fuel, as a last resort, may apply for an interim storage contract with DOE, under Sec. 135(b) of the Act, until not later than 3 years after a repository or monitored retrievable storage facility is available for spent fuel. For the reasons discussed above, the Commission is confident that in every case the spent fuel generated by those plants will be managed safely during the period between license expiration or termination and the availability of a mined waste repository for disposal.

To assure the continuity of safe management of spent fuel, the Commission, in a separate action, is preparing an amendment to 10 CFR Part 50 which would require licensees of operating nuclear power reactors to submit, no later than 5 years before expiration of the reactor operating license, written notification to the Commission, for its review and approval, of the actions which the licensee will take to manage and provide funding for the management of all irradiated fuel at the reactor site following expiration of the reactor operating license, until ultimate disposal of the spent fuel in a repository. The licensee's notification will be required to specify how the licensee will fund the financial costs of extended storage or other disposition of spent fuel. It is possible for the funding of the storage to be provided by an internal reserve fund or special assessment during that 5-year period to cover the costs of storage of the spent fuel after the expiration of the reactor operating license. The storage costs are not large relative to power generation costs. A representative figure is $1-million/year for storage of spent fuel in reactor basins beyond the operating license expiration [Addendum 2 to "Technology, Safety and Costs of Decommissioning a Reference BWR Power Station," NUREG/CR 0130 (July 1983); Addendum 1 to Technology, Safety and Costs of Decommissioning a Reference PWR Power Station," NUREG/CR 0672 (July 1983)].

Additional assurance that the conditions necessary for safe storage will be maintained until disposal facilities are available is provided by the Commission's authority to require continued safe management of the spent fuel past the operating license expiration or termination (10 CFR 50.82). If a utility should have technical problems in continuing its commitment to maintain safe storage of its spent fuel, NRC as the cognizant regulatory agency would intervene and the utility would be required to assure safe storage. If a licensee fails financially, or otherwise must cease its operations, the cognizant state public utility commission would be likely to require an orderly transfer to another entity. The successor would take over the licensee's facilities and, provided the conditions for transfer of licenses prescribed in NRC regulations (10 CFR 50.80) were met by the succeeding entity, operation of the original licensee's facilities would be permitted to continue. Moreover, an orderly transfer to a successor organization would be mandatory to protect the substantial capital investment. Further, the Commission believes that the possibility of a need for Federal action to take over stored spent fuel from a defunct utility or from a utility that lacked technical competence to assure safe storage is remote, but the authority for such action exists (sections 186c and 188 of the Atomic Energy Act of 1954, as amended; 42 U.S.C. 2236, 2238).

Interim storage capacity may be required for plants whose operating licenses expire or are terminated before sufficient repository capacity is available. As discussed in the rationale for the fifth finding, the Nuclear Waste Policy Act of 1982 includes a number of provisions to assure the availability of interim storage capacity for spent fuel during the period before repository operation (Secs. 131 through 137). Provisions are made for Federal government supplied interim storage capacity (up to 1900 metric tons) for civilian power reactors whose owners cannot reasonably provide adequate storage capacity.

In all cases where the interim storage is at a licensee's site, safe management will be assured by compliance with NRC regulations and specific license conditions. Where DOE provides the interim storage capacity, except in the use of existing capacity at Government-owned facilities, DOE is to "comply with any applicable requirements for licensing or authorization" (Sec. 135(a)(4)). If existing federally-owned storage facilities are used, NRC is required to determine "that such use will adequately protect the public health and safety" (Sec. 135(a)(1)). These provisions of the Act would assure that spent fuel will be managed in a safe manner until repository capacity is available. Facilities for reprocessing high-level waste, should any be constructed or become operational before a repository is available, would be licensed under 10 CFR Part 50, and solidification and interim storage of high level waste would be provided for at such facilities. For the foregoing reasons, the Commission finds reasonable assurance that high-level waste and spent fuel will be managed in a safe manner until sufficient repository capacity is available for its safe disposal.

2.4 Fourth Commission Finding

The Commission finds reasonable assurance that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 30 years beyond the expiration of that reactor's operating license at that reactor's spent fuel storage basin, or at either onsite or offsite independent spent fuel storage installations.

Although the Commission has reasonable assurance that at least one mined geologic repository will be available by the years 2007–09, the Commission also realizes that for various reasons, including insufficient capacity to immediately dispose of all existing spent fuel, spent fuel may be stored in existing or new storage facilities for some periods beyond 2007–09. The Commission believes that this extended storage will not be necessary

for any period longer than 30 years beyond the term of an operating license. For this reason, the Commission has addressed on a generic basis in this decision the safety and environmental impacts of extended spent fuel storage at reactor spent fuel storage basins or at either onsite or offsite spent fuel storage installations. The Commission finds that spent fuel can be stored safely and without significant environmental impacts for at least 30 years beyond the expiration of reactor operating licenses. To ensure that spent fuel which remains in storage will be managed properly until transferred to DOE for disposal, the Commission is proposing an amendment to its regulations (10 CFR Part 50). The amendment will require the licensee to notify the Commission, five years prior to expiration of its reactor operating license, how the spent fuel will be managed until disposal.

The Commission's finding is based on the record of this proceeding which indicates that significant releases of radioactivity from spent fuel under licensed storage conditions are highly unlikely. It is also supported by the Commission's experience in conducting more than 80 individual safety evaluations of storage facilities.

The safety of prolonged spent fuel storage can be considered in terms of four major issues: (a) The long-term integrity of spent fuel under water pool storage conditions, (b) structure and component safety for extended facility operation, (c) the safety of dry storage, and (d) potential risks of accidents and acts of sabotage at spent fuel storage facilities. Each of these issues is discussed separately below, in light of the information provided by the participants in this proceeding, and NRC experience in regulating storage of spent fuel.

A. Long-Term Integrity of Spent Fuel Under Water Pool Storage Conditions

The Commission finds that the cladding which encases spent fuel is highly resistant to failure under pool storage conditions. As noted by DOE in its Position Statement, there are up to 18 years of continuous storage experience for zircaloy-clad fuel and 12 years continuous storage experience for stainless-clad fuel (DOE PS p. IV–73). Corrosion studies of irradiated fuel at 20 reactor pools in the United States suggest that there is no detectable degradation of zircaloy cladding. Data from corrosion studies of spent fuel stored in Canadian pools also support this finding (A.B. Johnson, Jr., "Behavior of Spent Nuclear Fuel in Water Pool Storage," (UC–70) Battelle Pacific Northwest Laboratories (BNWL–2256, September, 1977) pp. 10–11, 17).

The long-term integrity of spent fuel in storage pools, which has been confirmed by observation and analysis, was cited by industry participants (e.g., Consolidated Industry Group: PHS pp. 3–6; UNWMG–EEI PS Doc. 4, p. 8; UG p. 2). No degradation has been observed in commercial power reactor fuel stored in onsite pools in the United States. Extrapolation of corrosion data suggests that only a few hundredths of a percent of clad thickness would be corroded after 100 years (A.B. Johnson, Jr., "Utility Spent Fuel Storage Experience," PNL–SA–6863, presented at the American Nuclear Society's Executive Conference on Spent Fuel Policy and its Implications, Buford, Georgia (April 2–5, 1978). The American Nuclear Society cited a study (G. Vesterbend and T. Olsson, BNWL–TR–320, May 1978, English Translation of RB78–29), which concluded that degradation mechanisms such as general corrosion, local corrosion, stress corrosion, hydrogen embrittlement, and delayed hydrogen cracking are not expected to produce degradation to any significant extent for 50 years (ANS PS p. 34).

Canadian experience, including occasional examination during 17 years of storage, has indicated no evidence of significant corrosion or other chemical degradation. Even where the uranium oxide pellets were exposed to pool water as a result of prior damage of the fuel assembly, the pellets have been inert to pool water, an observation also confirmed by laboratory studies ("Canadian Experience with Wet and Dry Storage Concepts," presented at the American Nuclear Society's Executive Conference on Spent Fuel Policy and Its Implications, Buford, Georgia (April 2–5, 1978)). Another Canadian study concluded that "50 to 100 years under water should not significantly affect their [spent fuel bundles] integrity" (Walker, J.F., "The Long-Term Storage of Irradiated CANDU Fuel Under Water," AECL–6313 Whiteshell Nuclear Research Establishment, January 1979). This appraisal was based on findings such as no deterioration by corrosion or mechanical damage during 16 years of storage in water, no release of fission products from the uranium dioxide matrix during 11 years of storage in water, and no fission-product induced stress corrosion cracking anticipated during water storage at temperatures below 100°C (Hunt C.E.L., J.C. Wood and A.S. Bain, "Long-Term Storage of Fuel in Water" AECL–6577, Chalk River Nuclear Laboratories, June 1979).

The ability of spent fuel to withstand extended water basin storage is also supported by metallurgical examination of Canadian zircaloy clad fuel after 11 years of pool storage, metallurgical examination of zircaloy clad PWR and BWR high burn-up fuel after five and six years in pool storage, and return of Canadian fuel bundles to a reactor after 10 years of pool storage. Periodic hot cell examination of high burn-up PWR and BWR bundles over 6 years of pool storage at the WAK Fuel Reprocessing Plant in Germany has also confirmed that spent fuel maintains integrity under pool storage conditions. Other countries having favorable experience with pool storage of zircaloy-clad spent fuel include: the United Kingdom, 13 years; Belgium, 12 years; Japan, 11 years; Norway, 11 years; West Germany, 9 years; and Sweden, 7 years (op. cit., A. B. Johnson, Jr., p. 7). Programs of monitoring spent fuel storage are being conducted in Canada, the United Kingdom and the Federal Republic of Germany (DOE PS pp. IV—59 to IV–61; UNWMG–EEI PS Doc. 4, p. 23).

The only fuel failures which have occurred in spent fuel pools involved types of fuel and failure mechanisms not found at U.S. commercial reactor facilities, e.g., degradation of zircaloy-clad metallic uranium fuel from the Hanford N-Reactor as a result of cladding damage in the fuel discharge system. The system differs from the fuel discharge systems of commercial reactors. Moreover, metallic uranium fuel is not used in commercial power reactors. NRDC cited some conclusions drawn by Mr. Justice Parker regarding his lack of confidence in long-term storage of spent fuel, based on the Windscale Inquiry in Great Britain in 1978, which involved stainless-steel-clad gas-cooled reactor fuel (NRDC PS p. 92). This is not pertinent to pool storage of commercial spent fuel since the high temperature conditions in a gas-cooled reactor which can cause sensitization of the cladding are not experienced by fuel in boiling or pressurized water reactors (op. cit., A.B. Johnson, Jr., pp. 17–18).

Some participants did not agree that there is an adequate basis for confidence in safe extended-term spent fuel storage. Although agreeing with the extent of experience cited by DOE and other participants, the Natural Resources Defense Council, for example, stressed that more experience is needed before one can be confident of safe extended storage. NRDC considered the length of storage experience cited by DOE as insufficient to establish that spent fuel can be stored safely for periods well in excess of 40 years (NRDC PS pp. 88–92). A similar position was taken by the State of Minnesota (Minn PHS pp. 8–9). NRDC referred to the problem of the long-term storage of spent fuel reported in the Windscale Inquiry Report by the Hon. Mr. Justice Parker, Vol. 1, pp. 29–30. However, the conclusion quoted from the report, when taken in context, refers only to irradiated fuel from AGR (advanced gas-cooled) nuclear power plants. As noted earlier, the conditions to which the fuel cladding is exposed in gas-cooled reactors differs from those in U.S. commercial light water reactors. Moreover, the cladding of AGR fuel is identified as stainless steel in the Windscale Inquiry Report. Only two

commercial LWR nuclear power plants operating in the U.S. today use stainless steel clad. Most U.S. nuclear fuel is zircaloy clad, and reactor operators have not seen evidence of degradation of LWR spent fuel, either zircaloy or stainless steel clad, in storage pools (*Nuclear Technology*, "Spent Fuel Storage Experience," A.B. Johnson, Jr., p. 171, Vol. 43, Mid-April 1979). Further, as stated earlier, cladding degradation caused by stainless steel sensitization in an AGR high temperature environment is not pertinent to the lower temperature environment of LWR's. Therefore, the problem of long-term storage of spent fuel reported in the Windscale Inquiry is not relevant to U.S. spent fuel.

After expiration of a reactor operating license, the fuel storage pools at the reactor site would be licensed under 10 CFR Part 72. The requirements of 10 CFR Part 72 provide for operation under conditions involving a careful control of pool water chemistry to minimize corrosion. The required monitoring of the pool water would provide an early warning of any problems with defective cladding, so that corrective actions may be taken. Experience indicates that, under licensed storage conditions, significant releases of radioactivity are highly unlikely. The Commission is confident that the regulations now in place will assure adequate protection of the public health and safety and the enviroment during the period when the spent fuel is in storage ("Final Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel," NUREG–0575, August 1979: Vol. 1, pp. ES–12, 4–10 to 4–17).

Although confidence that spent fuel will maintain its integrity during storage for an additional 30 years beyond the facility's license expiration date involves an extrapolation of experience by a factor of two or three in time, the extrapolation is made for conditions in which corrosion mechanisms are well understood. Technical studies cited above support the conclusion that corrosion would have a negligible effect during several decades of extended pool storage. The Commission finds that this extrapolation is reasonable and is consistent with standard engineering practice.

B. Structure and Component Safety for Extended Facility Operation For Storage of Spent Fuel in Water Pools

Questions were raised concerning the adequacy of structural materials and components of spent fuel storage basins to function effectively during periods that are double those assumed in the base design. This concern was expressed in connection with the possible necessity for longer storage times if permanent disposal is not available by the year 2006 (Del PS p. 4). The experience at the General Electric Company Morris Operation in Illinois, where a mechanical failure caused contaiminated water to leak into the environment, was cited as an example of an unforeseen failure that could jeopardize the safety of spent fuel storage (NECNP PS p. 65). A generic problem regarding pipe cracks in borated water systems at PWR plants was also cited as evidence of uncertainty that long-term interim storage would be safely accomplished without modification and fuel shuffling NECNP PS p. 64). The Commission notes that the latter problem was discussed in detail in the Atomic Safety and Licensing Board Notification, "Pipe Cracks in Stagnant Borated Water Systems at PWRs" dated August 14, 1979, in the ASLB consideration of a proposed licensing amendment to permit modification of a spent fuel storage pool [11 NRC 245 (1980)]. The Notification referred to by NECNP indicated that cracks had occurred in safety-related type-304 stainless steel piping systems which contained stagnant borated water. Apparently, the cracking was attributable to stress corrosion caused by the residual welding stresses in heat-affected zones. The NRC staff review found that such cracking was not directly related to spent fuel pool modifications, and that necessary repairs could be readily made. The staff concluded that cracks in low-pressure spent fuel cooling system do not have safety significance.

Extensive experience with storage pool operation has demonstrated the ability of pool components to withstand the operating environment (DOE CS pp. II–145 to II–148). In the relatively few cases of equipment failure, pool operators have been able to repair the equipment or replace defective components promptly (UNWMG–EEI PS Doc. 4, p. 25; UG p. 2). The Commission finds no reason why spent fuel storage basins would not be capable of performing their cooling and storage functions for a number of years past the design-basis period of 40 years if they are properly maintained.

As one participant pointed out," . . . the pool structure as well as the racks are designed to withstand extreme physical conditions set forth in NRC licensing requirements. These include seismic, hydrologic, meteorological and structural requirements" (UNWMG–EEI PS Doc. 4 p. 25; UG p. 2). The design requirements are set forth in 10 CFR Parts 50 and 72. The design-basis siting conditions for storage pools at reactor sites are those of the reactor itself. Siting conditions are reviewed by the NRC staff, the Advisory Committee on Reactor Safeguards and the Atomic Safety and Licensing Board at the construction permit stage and then reviewed again in connection with the issuance of the facility's operating license. In issuing a power reactor operating license, the Commission is, in effect, expressing its confidence that the design-basis siting conditions will not be exceeded during the 40-year license period. If pool storage facilities were used to store spent fuel after expiration of reactor operating licenses, the utilities would be able, as part of their continuing maintenance of storage facilities, to replace defective components in a timely way, if needed, so as to avoid any safety problems. Some participants (e.g., NECNP PS pp. 63–63; Minn PHS pp. 8–9; and Del PS p. 4), do not place the same weight which the Commission does on experience at spent fuel storage facilities and on studies cited by DOE and certain others which support the argument that the structural integrity of these basins can be readily maintained (DOE CS pp. II–145, III–13; UNWMG–EEI PS Doc. 4 p. 19). The disagreements appear to center largely on the extent to which present experience may be relied upon as a basis for predicting the safety of spent fuel storage over a period two or three times the design period.

The degradation mechanisms involved in spent fuel pool storage are well understood. The resulting changes in fuel cladding and pool systems and components are gradual and thus provide sufficient time for the identification and development of remedial action without subjecting plant personnel or the public to significant risk. The fuel storage racks are designed to maintain their integrity for many decades; if they fail in any way, they may be replaced. There are a number of routine and radiologically safe methods for maintenance at spent fuel storage basins to ensure their continued effective performance. These include replacing racks or other components, or moving spent fuel to another storage facility. The Commission finds that the extensive operating experience with many storage pools adequately supports predictions of long-term integrity of storage basins.

The Commission concludes that the experience with spent fuel storage provides an adequate basis for confidence in the continued safe storage of spent fuel in water pools either at or away from a reactor site for at least 30 years after expiration of the plant's license.

C. Safety of Dry Storage of Spent Fuel

While the record of this proceeding has focussed on water pool storage, the Commission notes that dry storage of spent fuel has also been addressed to a limited extent (e.g., DOE PS pp. IV–12 to IV–22 and IV–63 CS p. II–147, PHS p. 9; UNWMG–PS Doc 4 pp. 16–17 and CS pp. III–6–7; Tr. pp. 69–72). The NRC's

regulation 10 CFR Part 72 specifically covers dry storage of spent fuel (Section 72.2(c)), and experience with dry storage was a subject of public comment in the rulemaking ("Analysis of Comments on 10 CFR Part 72," NUREG–0587, pp. II–12 to II–13). NRC reports, the "Final Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel" (NUREG–0575) and "Dry Storage of Spent Nuclear Fuel, A Preliminary Survey of Existing Technology and Experience" (NUREG/CR–1223) which have been referenced in this proceeding, examined potential environmental impacts and experience with interim dry storage of spent fuel. The GEIS (Final Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel, NUREG–0575, Vol. 1, p. 8–2, August 1979) contained the conclusion that the use of alternative dry passive storage techniques for aged fuel, now being investigated by the Department of Energy, appears to be as feasible and environmentally acceptable as storage of spent fuel in water basins. Prior to the adoption of Part 72, dry storage of irradiated fuel had been licensed under Part 50 at the Hallam sodium graphite reactor. Dry storage is also presently licensed under Part 50 at the Ft. St. Vrain high temperature gas reactor.

Although the number of years of experience with dry storage systems is less than that with water pool storage, the understanding of some of the material degradation processes experienced in water pool storage should be applicable to dry storage. As discussed below, dry storage involves a simpler technology than that represented by water basin storage systems.[5] Water basin storage relies upon active systems such as pumps, renewable filters, and cooling systems to maintain safe storage. Favorable water chemistry must also be maintained to retard corrosion. On the other hand, dry storage reduces reliance upon active systems and does not need water which together with impurities may corrode spent fuel cladding. With convective circulation of an inert atmosphere in a sealed dry system, there is little opportunity for corrosion.[6] For these reasons, the Commission believes that safe dry storage should be achievable without undue difficulty. New dry storage experience with light water reactor (LWR) fuel is becoming available for examination, and the evaluations discussed below suggest that the favorable results of up to almost two decades of dry storage experience with non-LWR spent fuel can also be obtained for LWR spent fuel in adequately designed dry storage installations.

A recent review of dry storage experience by A.B. Johnson, Jr., et al. in "Behavior of Spent Nuclear Fuel and Storage Components in Dry Interim Storage" (PNL–4188, August 1982), provides an update of dry storage activities, particularly with respect to zircaloy-clad spent fuel. In this report, (pp. 18–24) the experimental data base for non-zircaloy-clad spent fuel, including stainless steel clad fuel and the data base for zircaloy-clad fuel are discussed. Tests conducted to verify the integrity of zircaloy cladding have not indicated any degradation in dry storage (p. 27). In summary, the report states (pp. 44–45):

Operating information is available from fueled dry well, silo, vault, and metal cask storage facilities. Maximum operational histories are:

	All fuel	Zircaloy-clad fuel
Dry wells	Up to 18 years	Up to 3 to 4 years.
Vaults	Up to 18 years	Up to 1 year.
Silos	Up to 7 years	Up to 7 years.
Metal casks		<1 year.

All times related to 1982.

Operational history with interim storage in metal casks is minimal; however, there is extensive experience with metal shipping casks. In addition, metal storage casks have been designed and tested, and cask tests with irradiated fuel are currently under way in the Federal Republic of Germany and are planned in Switzerland and the United States. The integrity of zircaloy-clad fuel in a given demonstration test is relevant to predicting fuel behavior in other dry storage concepts under similar conditions.

Information on experience with dry cask storage in other countries is also becoming available. K. Einfeld and J. Fleisch's paper, "Fuel Storage in the Federal Republic of Germany" discussed the results of dry storage research on spent fuel in an inert atmosphere. They note on page 3 of their report:

Several tests have been conducted to verify the integrity of LWR spent fuel cladding in dry storage. To date none of the integrity tests has indicated that the cladding is degrading during long-term storage. Even under conditions more severe than in the casks, the fuel shows no cladding failures. From the tests listed in Table II it can be concluded that dry storage under cask conditions even with starting temperatures to 400° C is not expected to cause cladding failures over the interim storage period.

Einfeld and Fleisch continue, in their report (pp. 3–4) to comment on the successful demonstration of cask storage:

A technical scale demonstration program with a fuel CASTOR cask is underway in the FRG since March 1982. The 16 assemblies which are subject to that program originate from the Wurgassen boiling water reactor. They resided in the core during 4 cycles of operation, burning up to about 27.8 GWD/t U.

The general objectives of the demonstration with a fully instrumented cask and fuel bundles are the verification of cask design parameters, the operational experience in cask handling and the expansion of the data base on fuel performance. Fig. 2 shows a schematic drawing of the cask design and the axial thermocouple locations.

The operational experiences and corresponding test data confirm the assumptions made about the cask concept and the cask loading and handling procedure. In addition, the technology data base for operating an interim storage plant could be expanded.

—In-pool loading of a large storage cask and specific cask handling has been successfully demonstrated.
—The passive heat transfer capabilities of the cask and fuel cladding integrity have been verified. The maximum local fuel rod temperatures for fuel with about one year decay time were within the expected range.
—The total radiation shielding characteristics (<10 mrem/h) are verified in practice" (references deleted).

The authors conclude:

The realization of the transport/storage cask concept, which is well under way in the Federal Republic of Germany, will provide sufficient interim spent fuel storage capacity with the facilities planned or under construction. Dry interim storage is a proven technology and thus it constitutes an essential step in closing the backend of the nuclear fuel cycle.

R.J. Steffens and J.B. Wright's paper [7], "Drywell Storage Potential," discussed drywell storage experience with pressurized water reactor spent fuel at the Nevada Test site. On page 6 of the paper, the authors note:

Another drywell performance assessment method being employed during the demonstration storage period is that of periodically monitoring the storage canister atmosphere for fission products, specifically krypton-85 gas. Samples drawn to date have shown no detectable concentrations of this product after approximately 3 years of storage, indicating a maintenance of the fuel cladding integrity.

A third paper presented at the same Topical Meeting, by E.R. Gilbert and A.B. Johnson, Jr., "Assessment of the Light-Water Reactor Fuel Inventory for Dry Storage," focuses on dry spent fuel storage with respect to an acceptable temperature range for storage in air.

[5] See, for example, K. Einfeld and J. Fleish, "Fuel Storage in the Federal Republic of Germany; and R.J. Steffen and J.B. Wright, "Westinghouse Advanced Energy Systems Division," Proceedings of the American Nuclear Society's Topical Meeting on Options for Spent Fuel Storage, in Savannah, Georgia, September 28 through 29, 1982; also A.B. Johnson, Jr., E.R. Gilbert, and R.J. Guenther, "Behavior of Spent Nuclear Fuel and Storage System Components in Dry Interim Storage," PNL–4188, August 1982.

[6] K. Einfeld and J. Fleisch, Ibid. p. 3.

[7] Proceedings of the American Nuclear Society's Topical Meeting on Options for Spent Fuel Storage, in Savannah, Georgia, September 28 through 29, 1982.

They conclude on page 8 of their report:

> Dry storage demonstrations now in progress suggest that by 1986 a major fraction of the U.S. PWR spent fuel inventory that was placed in water storage before 1981 can be stored in dry storage facilities below 150 to 200 °C.
>
> The LWR fuel inventory offers good prospects that the thermal characteristics of consolidated fuel will be acceptable for dry storage by proper selection of fuel.
>
> Dry storage of LWR fuel with defective cladding may be tolerable in inert cover gases or at temperatures below the threshold for significant oxidation in oxidizing cover gases. The range of acceptable storage temperatures is being investigated.

With respect to dry storage of spent fuel, the Commission notes the summary statement from A.B. Johnson, Jr., et al., "Behavior of Spent Nuclear Fuel and Storage Components in Dry Interim Storage" (PNL–4189), page xvii:

> Operational problems in vaults and dry wells have been minor after up to 18 yr. of operation (in 1982); and 7 yr of silo experience suggests that decades of satisfactory operation can be expected. Demonstration tests with irradiated fuel in metal storage casks are just beginning, but metal shipping casks with mild steel chambers have been used since the mid-1940s. Metal storage/shipping casks have successfully survived fire, drop, and crash tests.

Thus, with respect to the storage of spent fuel under dry conditions at storage installations located either at reactor sites or away from reactor sites, the Commission believes that current dry-storage technology is capable of providing safe storage for spent nuclear fuel. The modular character of dry storage installations enhances the ability to perform maintenance or to correct mechanical defects, if any should occur. The Commission is confident that its regulations will assure adequate protection of the public health and safety and the environment during the period when the spent fuel is in storage.

The Commission notes that section 211(2)(B) of the Nuclear Waste Policy Act authorizes the Secretary of Energy to carry out research on, and to develop facilities to demonstrate, dry storage of spent nuclear fuel. Although this provision indicates a judgment on the part of the Congress that additional research and demonstration is needed on the dry storage of spent fuel, the Commission believes the information discussed above is sufficient to reach a conclusion on the safety and environmental effects of extended dry storage. All areas of safety and environmental concern (e.g., maintenance of systems and components, prevention of material degradation, protection against accidents and sabotage) have been addressed and shown to present no more potential for adverse impact on the environment and the public health and safety than storage of spent fuel in water pools.

The technical studies cited above support the conclusion that corrosion would have a negligible effect during several decades of extended dry storage. The Commission's confidence in the safety of dry storage is based on an understanding of the material degradation processes, rather than merely on extrapolation of storage experience—together with the recognition that dry storage systems are simpler and more readily maintained. For these reasons, the Commission is confident that dry storage installations can provide continued safe storage of spent fuel at reactor sites for at least 30 years after expiration of the plant's license.

D. Potential Risks of Accidents and Acts of Sabotage at Spent Fuel Storage Facilities

The Commission finds that the risks of major accidents at spent fuel storage pools resulting in off-site consequences are remote because of the secure and stable character of the spent fuel in the storage pool environment, and the absence of reactive phenomena—"driving forces"—which may result in dispersal of radioactive material. Reactor storage pools and independent spent fuel storage installations have been designed to safely withstand accidents caused either by natural or man-made phenomena. Even remote natural risks such as earthquakes and tornados and the risks of human error such as in handling or storing spent fuel are addressed in the design and operational activities of storage facilities and in NRC's licensing reviews thereof under its regulations. Under 10 CFR Parts 50 and 72, spent fuel is stored in facilities structurally designed to withstand accidents and external hazards, such as those cited above, and to preclude radiation and radioactive material emissions from spent fuel that would significantly endanger the public health and safety. In order to preclude the possibility of criticality under normal or accident conditions, the spent fuel is stored in racks designed to maintain safe geometric configurations under seismic conditions. The spent fuel itself consists of solid ceramic pellets which are encapsulated in metal clad rods held in gridded assemblies and stored underwater in reinforced concrete structures or in sealed dry storage installations such as concrete dry wells, vaults and silos or massive metal casks. The properties of the spent fuel (which in extended storage has decayed to the point where individual fuel assemblies have a heat generation rate of several hundred watts or less) and of the benign storage environment result in spent fuel storage being an activity with very little potential for adversely affecting the environment and the public health and safety. While any system employing high technology is subject to some equipment breakdowns or accidents, water pool storage facilities have operated with few serious problems (DOE PS at IV–56 to IV–57; UNWMG–EEI PS Doc. 4 p. 26). In these cases, the events at spent-fuel pools have been manageable on a timely basis. Similarly, dry storage of spent fuel, as discussed in Section C above, appears to be at least as safe as water pool storage. A discussion of risks related to spent fuel storage is provided below.

Comments from participants on the subject of accidents and their potential consequences at spent-fuel storage facilities included a description of nonspecific references to numerous "accidents" in spent-fuel storage facilities, a discussion of cases of leaks and inadvertent releases of contaminated storage pool water, and a suggestion that waste storage should be physically separated from reactor operation to reduce the risk of damage to the storage facility in the event of a reactor accident, and vice versa (NY PS pp. 102–107; OCTLA PS p. 12). The State of New York, in its discussion of possible accidents at spent-fuel storage pools, cited reports of an accident in the Soviet Union that is believed to have involved reprocessing plant wastes stored in tanks at a waste storage facility (NY PS pp. 107–108). The situation, as reconstructed from limited data, cannot be compared to the storage of ceramic fuel in metal cladding, placed in water storage pools. The issue raised, therefore, is not relevant to this proceeding. The need for continued management of pool storage facilities over an extended time period was considered by some participants as creating a potential hazard because of the increased possibility of human errors or mismanagement (NRDC PS pp. 89–90). The State of New York characterized the Three Mile Island reactor accident as caused by multiple technical and human failures, and postulated that such failures are possible at storage facilities, and would result in serious off-site consequences (NY PS p. 107).

These observations do not appear to take account of the numerous safety analyses that have been made of water pool storage and of alternative long-term storage methods which have demonstrated storage to be both safe and environmentally acceptable. Of course, the possibility of human error cannot be completely eliminated. However, Commission regulations (e.g., 10 CFR Part 55; 10 CFR Part 72, Subpart I) include explicit requirements for operator training, the use of written procedures for all safety-related operations and functions in the plant, and certification or licensing of

operators, with the objective of minimizing the opportunity for human error. Unlike the accident at the Three Mile Island reactor, human error at a spent fuel storage installation does not have the capability to create a major radiological hazard to the public. The absence of high temperature and pressure conditions that would provide a driving force essentially eliminates the likelihood that an operator error would lead to a major release of radioactivity (DOE CS pp. II–156 to 158). In addition, features incorporated in storage facilities are designed to mitigate the consequences of accidents caused by human error or otherwise (DOE PS IV–34).

The possibility of terrorist attacks on nuclear facilities was advanced as an argument against the acceptability of extended interim storage of spent fuel (NRDC PS p. 90). The intentional sabotage of a storage pool facility is possible, and NRC continues to implement actions to further improve security at such facilities. The consequences would be limited by the realities that, except for some gaseous fission products, the radioactive content of spent fuel is in the form of solid ceramic material encapsulated in high-integrity metal cladding and stored underwater in a reinforced concrete structure. Under these conditions, the radioactive content of spent fuel is relatively invulnerable to dispersal to the environment (Final Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel, NUREG–0575, Vol. 1.). Similarly, dry storage of spent fuel in dry wells, vaults, silos and metal casks is also relatively invulnerable to sabotage and natural disruptive forces, because of the weight and size of the sealed, protective enclosures which may include 100-ton steel casks, large concrete lined near-surface caissons and surface concrete silos (NUREG/CR–1223, p. IV–C–2).

E. Summary

In summary, the Commission finds that spent fuel can be stored safely at independent spent fuel storage installations or at reactor sites for at least 30 years beyond the expiration of reactor operating licenses. This finding is based on extensive experience and on many factors that are not site-specific. These factors include the substantial capability of the fuel cladding to maintain its integrity under storage conditions, a capability verified in extensive technical studies and experience; the extreme thermal and chemical stability of the fuel form, enriched uranium oxide pellets; the long-term capability of spent fuel storage facilities to dissipate spent fuel heat and retain any radioactive material leakage; and the relatively straightforward techniques and procedures for repairing spent fuel storage structures, replacing defective components or equipment, or undertaking other remedial actions to assure containment of radioactivity (A.B. Johnson, Jr., "Behavior of Spent Nuclear Fuel in Water Pool Storage". (UC–70) Battelle Pacific Northwest Laboratories (BNWL–2256, September 1977)). These factors contribute to the assurance that spent fuel can be stored for extended periods without significant impact on the public health and safety and the environment. Moreover, any storage of spent fuel at independent spent fuel storage installations or reactor sites beyond the operating license expiration will be subject to licensing and regulatory control to assure that operation of the storage facilities does not result in significant impacts to the public health and safety.

For the reasons discussed previously (Sections 2.4 A through D above), the Commission also concludes, from the record of this proceeding, that storage of spent fuel either at or away from a reactor site for 30 years beyond the operating license expiration would not result in a significant impact to the environment or an adverse effect on the public health and safety. The Commission's findings are also supported by NRC's experience in more than 80 individual safety evaluations of spent fuel storage facilities conducted in recent years. The record indicates that significant releases of radioactivity from spent fuel under licensed storage conditions are highly unlikely. This is primarily attributable to the resistance of the spent fuel to corrosive mechanisms and the absence of any conditions that would result in offsite dispersal of radioactive material. The Commission concludes that the possibility of a major accident or sabotage with off-site radiological impacts at a spent-fuel storage facility is extremely remote because of the characteristics of spent-fuel storage. These include the inherent properties of the spent fuel itself, the benign nature of the water pool or dry storage environment, and the absence of any conditions that would provide a driving force for dispersal of radioactive material. Moreover, there are no significant additional non-radiological impacts which could adversely affect the environment if spent fuel is stored beyond the expiration of operating licenses for reactors. The non-radiological environmental impacts associated with site preparation and construction of storage facilities are, and will continue to be, considered by the NRC at the time applications are received to construct these facilities, which are licensed under NRC's regulations in either 10 CFR Part 50 for reactors or 10 CFR Part 72 for independent spent fuel storage facilities. The procedure to be followed in implementing the Commission's generic determination is the subject of rulemaking which the Commission has conducted.

2.5 Fifth Commission Finding

The Commission finds reasonable assurance that safe independent onsite spent fuel storage or offsite spent fuel storage will be made available if such storage capacity is needed.

The technology for independent spent fuel storage installations as discussed under the fourth Commission Finding, is available and demonstrated. The regulations and licensing procedures are in place. Such installations can be constructed and licensed within a five-year time interval. Before passage of the Nuclear Waste Policy Act of 1982 the Commission was concerned about who, if anyone, would take responsibility for providing such installations on a timely basis. While the industry was hoping for a government commitment, the Administration had discontinued efforts to provide those storage facilities (Tr. pp. 157–158). The Nuclear Waste Policy Act of 1982 establishes a national policy for providing storage facilities and thus helps to resolve this issue and assure that storage capacity will be available.

Prior to March 1981, the DOE was pursuing a program to provide temporary storage in off-site, or away-from-reactor (AFR), storage installations. The intent of the program was to provide flexibility in the national waste disposal program and an alternative for those utilities unable to expand their own storage capacities (DOE PS p. I–11; DOE CS p. II–66).

Consequently, the participants in this proceeding assumed that, prior to the availability of a repository, the Federal government would provide for storage of spent fuel in excess of that which could be stored at reactor sites. Thus, it is not surprising that the record of this proceeding prior to the DOE policy change did not indicate any direct commitment by the utilities to provide AFR storage. On March 27, 1981 DOE placed in the record a letter to the Commission stating its decision "to discontinue its efforts to provide Federal government-owned or controlled away-from-reactor storage facilities." The primary reasons for the change in policy were cited as new and lower projections of storage requirements and lack of Congressional authority to fully implement the original policy.

The record of this proceeding indicates a general commitment on the part of industry to do whatever is necessary to avoid shutting down reactors or derating them because of filled spent fuel storage pools. While industry's incentive for keeping a reactor in operation no longer applies after expiration of its operating license,

utilities possessing spent fuel are required to be licensed and to maintain the fuel in safe storage until removed from the site. Industry's response to the change in DOE's policy on federally-sponsored away-from-reactor (AFR) storage was basically a commitment to do what is required of it, with a plea for a clear unequivocal Federal policy (Tr. pp. 157–159). The Nuclear Waste Policy Act of 1982 has now provided that policy.

The Nuclear Waste Policy Act defines public and private responsibilities for spent fuel storage and provides for a limited amount of federally-supported interim storage capacity. The Act also includes provisions for monitored retrievable storage facilities and for a research, development and demonstration program for dry storage. The Commission believes that these provisions provide added assurance that safe independent onsite or offsite spent fuel storage will be available if needed.

In Subtitle B of the Act, "Interim Storage Program," Congress found that owners and operators of civilian power reactors "have the primary responsibility for providing interim storage of spent nuclear fuel from such reactors" by maximizing the use of existing storage facilities onsite and by timely additions of new onsite storage capacity. The Federal government is responsible for encouraging and expediting the effective use of existing storage facilities and the addition of new storage capacity as needed. In the event that the operators cannot reasonably provide adequate storage capacity to assure the continued operation of such reactors, the Federal government will assume responsibility for providing interim storage capacity for up to 1900 metric tons of spent fuel (Sec. 131(a)). Such interim storage capacity is to be provided by the use of available capacity at one or more Federal facilities, the acquisition of any modular or mobile storage equipment including spent fuel storage racks, and/or the construction of new storage capacity at any reactor site (Sec. 135(a)(1)).

The Nuclear Waste Policy Act authorizes the Secretary of Energy to enter into contracts with generators or owners of spent fuel to provide for storage capacity in the amount provided in the Act (Sec. 136(a)(1)). However, such contracts may be authorized only if the NRC determines that the reactor owner or operator cannot reasonably provide adequate and timely storage capacity and is pursuing licensed alternatives to the use of Federal storage capacity (Sec. 135(b)).[8] Further, any spent fuel stored in the "interim storage program" is to be removed from the storage site on facility "as soon as practicable" but in no event later than 3 years following the availability of a repository or monitored retrievable storage facility (Sec. 135(e)). The Act establishes an "Interim Storage Fund" for use in activities related to the development of interim storage facilities, including the transportation of spent fuel and impact assistance to state and local governments (Sec. 136(d)).

In addition to providing for interim storage capacity, Congress found that "the long-term storage of high level radioactive waste or spent nuclear fuel in monitored retrievable storage facilities is an option for providing safe and reliable management of such waste or spent fuel." By June 1, 1985, the Secretary of Energy must complete a detailed study of the need for, and feasibility of, such a facility and submit to Congress a proposal for the construction of one or more such facilities. The Act also directs the Secretary of Energy to establish a demonstration program, in cooperation with the private sector, for the dry storage of spent nuclear fuel at reactor sites and provide consultative and technical assistance on a cost-sharing basis to assist utilities lacking interim storage capacity to obtain the construction, authorization and appropriate license from the NRC. Such assistance may include the establishment of a research and development program for the dry storage of no more than 300 metric tons of spent fuel at federally-owned facilities (Sec. 218, (a)(b)(c)).

The Commission's confidence that independent on-site and/or off-site storage capacity for spent fuel will be available as needed is further supported by the strong likelihood that only a portion of the total spent fuel generated will require storage outside of reactor storage basins (DOE PS pp. V–3 to V–13). Estimates of the amount of spent fuel requiring storage away from reactors have declined significantly over the duration of this proceeding (DOE March 27, 1981 letter from O. Brown II, DOE Office of General Counsel, to M. Miller NRC, Presiding Officer in this proceeding).

DOE reported that cummulative spent fuel discharges, previously estimated as 100,000 metric tons of uranium (MTU), dropped to 72,000 MTU through the year 2000. Projected requirements for additional spent fuel storage capacity begin in 1986 (instead of 1981) and increase to 9500 MTU per year by 1997. Earlier projections indicated a need for 16,000 MTU per year for additional storage capacity in 1997.[9] DOE pointed out that additional storage requirements could be satisfied in a number of ways, including: (a) Use of private existing AFR storage facilities; (b) construction of new water basins at reactor facilities or away from reactor facilities by private industry or the utilities; (c) transshipment of spent fuel between reactors operated by different utilities; (d) disassembly of spent fuel and storage of spent fuel rods in canisters; and (e) dry storage at reactor sites.

Subsequently, DOE published new estimates for additional spent fuel storage capacity ("Spent Fuel Storage Requirements", DOE/RL–82–1, June, 1982). These estimates show a maximum required away-from-reactor (AFR) storage capacity of 8610 metric tons uranium of spent fuel in the year 1997. This is a decline from DOE's previously published planning-base case. The information in Table 1 below is excerpted from DOE/RL–83–1 and provides a range of projections of additional storage capacity needs. The first column is a projection of storage capacity needed over and above the currently existing and planned storage capacity. The second column provides projected values of additional storage capacity needed if maximum re-racking is conducted at existing or planned reactor basin storage pools. The storage capacity needs shown in the second column are somewhat smaller than in the first column. A further decrease in additional needed storage capacity is shown in the third column, which takes into account the possibility of transshipment of fuel from one reactor basin to another basin owned by the same utility. The projected values of needed storage capacity in the first and third columns provide a range of upper and lower bound values, respectively. The most likely outcome expected by DOE corresponds to the values in the second column. This was formerly known as the planning base case and is now termed the reference case. All projections shown in the table assume the maintenance of a full core reserve. The magnitude of need for additional spent fuel storage capacity projected by DOE has continued to decline, even though DOE has not assumed the use of newly developed technology, such as fuel rod consolidation.

The cumulative amount of spent fuel to be disposed of in the year 2000 is expected to be 58,000 metric tons of uranium [Spent Fuel Storage Requirements (Update of DOE/RL–82–1) DOE/RL–83–1, published January, 1983]. The additional required storage capacity of 13,000 metric tons of uranium projected in the second column for the year 2000 is less than 25% of the total quantity of spent fuel projected to be in storage. It is expected that additional storage will be provided at the reactor site, with some smaller portion to be moved offsite.

[8] Accordingly, the Commission has published proposed "Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity," 10 CFR Part 53 (48 *FR* 19382, April 29, 1983).

[9] DOE's planning-base studies assume maximum basin re-racking at reactors and the maintenance of full-core reserve in reactor basins.

TABLE 1.—ADDITIONAL CUMULATIVE SPENT FUEL STORAGE REQUIREMENTS, OVER AND ABOVE CURRENT AND PLANNED STORAGE AT REACTOR STORAGE BASINS (METRIC TONS OF URANIUM)[1]

	No change in current or planned storage capacity	Use maximum reracking of current and planned storage capacity	Maximum reracking plus transhipment
Year:			
1982	0	0	0
1983	0	0	0
1984	13	13	0
1985	13	13	0
1986	110	110	3
1988	550	490	90
1990	1,500	1,380	310
1995	5,610	5,080	3,000
2000	14,760	13,090	10,370

[1] Spent Fuel Storage Requirements (Update of DOE/RL-82-1) DOE/RL-83-1, published January, 1983.

In response to the Commission's Second Prehearing Memorandum and Order (Nov. 6, 1981) the participants commented on the significance to the proceeding of issues resulting from the DOE policy change on spent fuel storage. The utilities generally limited their written responses to a restatement of the safety of interim storage and an affirmation of the technical and practical feasibility of the alternatives to Federal AFR storage facilities. An implied commitment by industry to implement AFR storage if necessary using one of the several feasible spent fuel storage alternatives is evident from the responses of the utilities, the nuclear industry, and associated groups (i.e., Tr. p. 159).

Based upon the foregoing, the Commission has, then, reasonable assurance that safe independent onsite or offsite spent fuel storage will be available if needed. The technology is demonstrated and the licensing procedures in place. The Nuclear Waste Policy Act establishes a national policy on interim storage of spent fuel and provides for contingency Federal storage capacity to augment that provided by industry. Further, the amount of fuel which may have to be stored in independent spent fuel storage facilities is less than was originally thought.

Reference Notation

The following abbreviations have been used for the reference citations in the Appendix:

PS Position Statement
CS Cross-Statement
PHS Pre-Hearing Statement
Tr. Transaction* of January 11, 1982 public meeting with the Commissioners

Participants have been identified by the following citations:

Citation and Participant

AIChE—American Institute of Chemical Engineers
ANS—American Nuclear Society
AEG—Association of Engineering Geologists
AIF—Atomic Industrial Forum, Inc.
—Bech—Bechtel National, Inc.
CDC—California Department of Conservation
CEC—California Energy Commission
CPC—Consumers Power Company
Del—State of Delaware
DOE—U.S. Department of Energy
ECNP—Environmental Coalition on Nuclear Power
GE—General Electric Company
Ill—State of Illinois (PS includes Roy affidavit)
Lewis—Marvin I. Lewis
Lochstet—Dr. William A. Lochstet
Minn—State of Minnesota
MAD—Mississippians Against Disposal
NECNP—New England Coalition on Nuclear Pollution
NfE—Neighbors for the Environment (PS includes papers by Dornsife, Rae, and Strahl)
NRDC—Natural Resources Defense Council, Inc.
NY—State of New York
OCTLA—Ocean County and Township of Lower Alloway Creek
Ohio—State of Ohio
SC—State of South Carolina
SE2—Scientists and Engineers for Secure Energy, Connecticut Chapter
SHL—Safe Haven, Ltd.
SMP—Sensible Main Power, Inc.
TVA—Tennessee Valley Authority
UNWMG-EEI—Utility Nuclear Waste Managment Group—Edison Electric Institute
USGS—United States Geological Survey
Vt—State of Vermont
Wis—State of Wisconsin (PS includes comments by Deese, Mudrey, Kelly, and Leverance)
UG—The Utilities Group (Niagara Mohawk Power Corp., Omaha Public Power District, Power Authority of the State of New York, and Public Service Company of Indiana, Inc.)

*The Commission considers this transcript to be part of the administrative record in this rulemaking. However, the transcript has not been reviewed for accuracy by the Commission on the participants, and therefore is only an informal record of the matters discussed.

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10 CFR Parts 50 and 51

Requirements for Licensee Actions Regarding the Disposition of Spent Fuel Upon Expiration of Reactor Operating Licenses

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to incorporate the following provisions: (1) The Commission has reasonable assurance that no significant environmental impacts will result from the storage of spent fuel for at least 30 years beyond the expiration of nuclear reactor operating licenses. Accordingly, no discussion of any environmental impact of spent fuel storage for the period following expiration of the license or amendment applied for, is required in connection with the issuance or amendment of an operating license for a nuclear reactor or in connection with the issuance of an initial license or an amendment to an initial license for an independent spent fuel storage installation. (2) Operating nuclear power reactor licensees are required no later than 5 years before expiration of the reactor operating license, to submit for NRC review and approval, their plans for managing spent fuel at their site until the spent fuel is transferred to the Department of Energy for disposal.

EFFECTIVE DATE: November 29, 1984.

FOR FURTHER INFORMATION CONTACT: Dennis Rathbun or Clyde Jupiter, Office of Policy Evaluation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (202) 634-3295, or Sheldon Trubatch, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (202) 634-3224.

SUPPLEMENTARY INFORMATION:

Background

By a Notice of Proposed Rulemaking dated October 25, 1979 (44 FR 61372), the Nuclear Regulatory Commission ("Commission" or "NRC") began a generic rulemaking proceeding "to reassess its degree of confidence that radioactive wastes produced by nuclear facilities will be safely disposed of, to determine when any such disposal will be available, and whether such wastes can be safely stored until they are safely disposed of." This proceeding became known as the "Waste Confidence" rulemaking proceeding, and was conducted partially in response to a remand by the United States Court of Appeals for the D.C. Circuit. *State of Minnesota* v. *NRC*, 602 F.2d 412 (1979). *State of Minnesota* involved a challenge to license amendments to permit the expansion of spent fuel pool storage capacities at two nuclear power plants. It was contended that uncertainty regarding ultimate disposal of commercial nuclear wastes required the Commission to consider the safety and environmental implications of storing spent fuel in the pools for an indefinite period following expiration of the plants' operating licenses. The Commission had excluded consideration of such long-term onsite storage from the license amendment proceedings, relying on its earlier finding (42 FR 34391, July 5, 1977) that safe permanent disposal of reactor wastes would be available when needed.

The Court of Appeals agreed with the Commission that, in accordance with the "rule of reason" implicit in the

National Environmental Policy Act (NEPA), impacts of extended on-site storage of spent fuel need not be considered in licensing proceedings unless such storage was reasonably foreseeable and not merely a theoretical possibility. The Court held, however, that the Commission's statement of reasonable confidence in the timely availability of waste disposal solutions was "not the product of a rulemaking record devoted expressly to considering the question" and furthermore did not address the particular problem whether disposal solutions would be available before the expiration of plant operating licenses. *Id.* at 417. Accordingly, the D.C. Circuit remanded to the Commission for determination "whether there is reasonable assurance that an off-site storage solution will be available by the years 2007–2009, the expiration of the plants' operating licenses, and if not, whether there is reasonable assurance that the fuel can be stored safely at the site beyond those dates." *Id.* at 418. The Court noted that "the breadth of the questions involved and the fact that the ultimate determination can never rise above a prediction suggest that the determination may be a kind of legislative judgment for which rulemaking would suffice." *Id.* at 417. The Court agreed that the Commission "may proceed in these matters by generic determinations." *Id.* at 419. *Accord, Potomac Alliance* v. *NRC*, 682 F.2d 1030 (D.C. Cir. 1982).

Amendment to Part 51

Elsewhere in this issue, the Commission announced the conclusions it reached in the Waste Confidence rulemaking proceeding. The Commission found that there is reasonable assurance that one or more mined geologic repositories for commercial high-level radioactive waste and spent fuel will be available by 2007–2009. However, some reactor operating licenses may expire without being renewed or some reactors may be permanently shut down prior to this period. Since independent spent fuel storage installations have not yet been extensively by developed, there is then a probability that some onsite spent fuel storage after license expiration may be necessary or appropriate. In addition, the Commission also realizes that some spent fuel may be stored in existing or new storage installations for some period beyond 2007–2009.

The Commission hereby adopts a rule providing that the environmental impacts of at-reactor storage after the termination of reactor operating licenses need not be considered in Commission proceedings related to issuance or amendment of a reactor operating license. This rule has the effect of continuing the Commission's practice, employed in the proceedings reviewed in *State of Minnesota*, of limiting considerations of environmental impacts of spent fuel storage in licensing proceedings to the period of the license in question and not requiring the NRC staff or the applicant to address the impacts of extended storage past expiration of the license applied for. The rule relies on the Commission's generic determination in the Waste Confidence proceeding that the licensed storage of spent fuel for 30 years beyond the reactor operating license expiration either at or away from the reactor site is feasible, safe, and would not result in a significant impact on the environment. For the reasons discussed in the Waste Confidence decision, the Commission believes there is reasonable assurance that adequate disposal facilities will become available during this 30-year period. Thus, there is no reasonable probability that storage will be unavoidable past the 30-year period in which the Commission has determined that storage impacts will be insignificant.

The same safety and environmental considerations apply to fuel storage installations licensed under Part 72 as for storage in reactor basins. Accordingly, in licensing actions involving (a) the storage of spent fuel in new or existing facilities, or (b) the expansion of storage capacity at existing facilities, the NRC will continue to require consideration of reasonably foreseeable safety and environmental impacts of spent fuel storage only for the period of the license applied for. The amendment to 10 CFR Part 51 confirms that the environmental impacts of spent fuel storage in reactor facility storage pools or independent spent fuel storage installations for the period following expiration of the reactor or installation storage license or amendment applied for need not be addressed in any environmental report, impact statement, impact assessment, or other analysis prepared in connection with the reactor operating license or amendment to the operating license, or initial license for an independent spent fuel storage installation, or amendment thereto.

The Commission's conclusions with respect to safety and environmental impacts of extended storage beyond expiration of current operating licenses are supported by the record in NRC's Waste Confidence proceeding and by NRC's experience in more than 80 individual safety and environmental evaluations conducted in storage licensing proceedings. The record of the Waste Confidence proceeding indicates that significant release of radioactivity from spent fuel under licensed storage conditions is highly unlikely because of the resistance of the spent fuel cladding to corrosive mechanisms and the absence of any conditions that would provide a driving force for dispersal of radioactive material. The non-radiological environmental impacts associated with site preparation and construction of storage facilities are and will continue to be considered by the NRC at the time applications are received to construct these facilities, which are licensed under NRC's regulations in either 10 CFR Part 50 for reactors or 10 Part 72 for independent spent fuel storage installations. There are no significant additional non-radiological impacts which could adversely affect the environment for storage past the expiration of operating licenses at reactors and independent spent fuel storage installations.

The amendments to Part 51 published here include § 51.23 (a), (b) and (c) as well as conforming amendments in §§ 51.30(b), 51.53 (a) and (b), 51.61, 51.80, 51.95 and 51.97. Paragraph 51.23(a) is a restatement of a final generic Commission determination (elsewhere in this issue) based on the Waste Confidence rulemaking proceeding, while § 51.23 (b) and (c) establish the procedures for implementing that generic determination in individual licensing cases.

Amendment to Part 50

The Commission is also adopting an amendment to 10 CFR Part 50 as set forth here, concerning the management of spent fuel from nuclear power reactors whose operating licenses may expire prior to the availability of a repository. The procedures established by this amendment are intended to confirm that there will be adequate lead time for whatever actions may be needed at individual reactor sites to assure that the management of spent fuel following the expiration of the reactor operating license will be accomplished in a safe and environmentally acceptable manner.

The Commission amends § 50.54 to establish requirements that the licensee for an operating nuclear power plant reactor shall no later than 5 years prior to expiration of the reactor operating license submit plans for NRC review and approval of the actions which the licensee proposes for management of all irradiated fuel at the reactor upon expiration of its operating license. No specific course of action is required of the licensee by the NRC. Licensee actions could include, but are not necessarily limited to, continued storage of spent fuel in the reactor spent fuel storage basin, storage in an independent spent fuel storage installation (refer to 10 CFR 72.3(m)) located at the reactor site or at another site; transshipment to and storage of the fuel at another operating reactor site in that reactor's basin; reprocessing of the fuel if it appears that licensed reprocessing facilities will be available; or disposal of the fuel in a repository. The proposed licensee actions must be consistent with NRC requirements for licensed

possession of irradiated or spent fuel (as defined in § 72.3(v)) and must be capable of being authorized by the NRC and implemented by the licensee on a timely basis. The licensee's plans must specify how the financial costs of extended storage or other disposition of spent fuel will be funded. Further, the licensee's plans must describe the proposed disposition of all irradiated fuel from the reactor. The licensee shall notify the NRC of any significant changes to these plans; changes are not precluded provided that the licensee maintains the capability to manage the spent fuel safely.

The Commission notes that extended storage of spent fuel at a reactor beyond the expiration date of the operating license will require an amendment to the Part 50 license to cover possession only of the reactor and spent fuel under the requisite provisions of Parts 30, 50 and 70, or an authorization pursuant to Part 72, "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation" (ISFSI). This rulemaking does not alter the requirements and provisions of Parts 51 and 72 with respect to the performance of environmental reviews of the impacts of spent fuel storage in an independent spent fuel storage installation or extended storage in a reactor spent fuel pool. This means that the NRC staff will continue to perform environmental reviews before issuing a license under 10 CFR Part 72 or an amendment for extended storage under 10 CFR Part 50. Notice of the receipt of a license application for storage of spent fuel pursuant to Part 72 will be published in the **Federal Register**.

Related Commission Actions

On March 13, 1978, the NRC published an Advance Notice of Proposed Rulemaking indicating that the NRC was reevaluating its decommissioning policy and considering amending its regualtions to provide more specific guidance on decommissioning of nuclear facilities (43 FR 10370). In January 1981, NRC published a "Draft Generic Environmental Impact Statement on Decommissioning Nuclear Facilities" (NUREG–0586). Proposed amendments to 10 CFR Parts 30, 40, 50, 51, 70, and 72 are being prepared by the NRC staff for Commission consideration. The proposed amendments for decommissioning would allow unrestricted use of a reactor or independent spent fuel storage installation site and would permit termination of the license. However, the storage of irradiated fuel either in a reactor basin or in an independent spent fuel storage installation would require restricted access and management of the storage facility to protect public health and safety. Thus, any continued storage of spent fuel beyond expiration of an operating license would be licensed under either Parts 50 or 72 and could preclude final decommissioning of the site.

Analysis of Public Comment

1. Introduction

Proposed amendments to 10 CFR Parts 50 and 51, related to the Commission's Waste Confidence decision, were published in the **Federal Register** (48 FR 22730) for public comment on May 20, 1983. Section 50.54(aa) (formerly identified as § 50.54(x)) proposed to require licensees to submit no later than 5 years before expiration of reactor operating licenses a plan for post-operation management of spent fuel which is onsite at the time of license expiration. Section 51.23(a) (formerly identified as § 51.5(e)(1)) proposed a restatement of the Commission's generic determination in the Waste Confidence decision that no significant environmental impacts will result from onsite or offsite storage of spent fuel up to 30 years after reactor operating license expiration, that there is reasonable assurance that a repository will be available by 2007–2009, and that sufficient repository capacity will be available within 30 years beyond license expiration to dispose of reactor waste and spent fuel. Section 51.23(b) (formerly identified as § 51.5(e)(2)) proposed that the environmental impacts of potential extended spent fuel storage (i.e., storage beyond the period of an existing or initial license) need not be addressed in connection with a reactor operating license or the license for an independent spent fuel storage installation.

Comments were received from 21 respondents to the May 20, 1983 request. In addition to substantive comments discussed below, some commenters questioned: (1) The adequacy of the opportunity to comment on the Commission's fourth finding and supporting documentation; (2) the Commission's compliance with NEPA. In response, the Commission reopened the comment period (48 FR 50746, November 3, 1983). These later comments represent expanded discussions of procedural and environmental issues raised in the May 20, 1983 comment period and the Commission's responses to them are set out in the companion Waste Confidence decision published concurrently with this document. For the reasons discussed there, the Commission found no basis to modify its fourth finding or the related supporting documentation. The participants are identified by the abbreviated citations defined in Section 5 below.

2. Proposed Provisions of 10 CFR 50.54(bb)

a. Timely Submission of Spent Fuel Management Plans

(1) *Summary of Comments.* The proposed rule would require each reactor licensee to submit, no later than 5 years before expiration of the operating license, written notification to the Commission describing the licensee's program for post-operational management of all irradiated fuel which is at the reactor at the time of expiration of the operating license, pending ultimate disposal of the irradiated fuel in a repository.

Some respondents agreed with the proposed notification date (Tol. Ed., UNWMG–EEI p. 3; MP&L). Others believed that the submittal of notification only 5 years before expiration of the reactor operating license was too late; rather, they would require utilities with operating reactors to submit spent fuel management plans within six months of issuance of this rule. For new reactors, these latter respondents advocated submission of plans prior to issuance of an operating license (UCS p. 2; NECNP p. 1; Hiatt) or even sooner (CNPP p. 1). Still others agreed that early planning was essential but did not recommend specific timing for submittal of plans (Wis. p. 2; ISAS p. 1; WED, EPI pp. 1, 2).

Among the reasons advanced for recommending an earlier planning requirement were the following: Industry's alleged record of reluctance to accept its responsibilities for spent fuel storage (Hiatt; ISAS p. 1; EPI p. 1); five years before license expiration the utility's primary concerns would be the massive inventory of spent fuel on hand, possible financial constraints as a result of reduction in the rate base, and the need to concentrate on newer and more long-term generating facilities (UCS, p. 2). UCS remarked that the requirement to submit a management plan near the end of the license term implied NRC might be willing to permit development of onsite semi-permanent storage facilities (UCS p. 2). Other respondents pointed out that earlier planning for spent fuel management is needed because the reactor may be shut down prior to the license expiration date; some plants may be shut down prematurely as a result of accidents or inability to meet newer regulatory requirements, and others may be shut down because of premature aging, steam generator or primary system degradation, or unacceptable severe accident risks (ISAS p. 1; EPI pp. 1, 2). One respondent recommended that the NRC require utilities to prepare spent fuel management plans every 5 years (EPI p. 3).

The Utility Decommissioning Group stated that consideration of premature shutdown due to accidents or other

conditions was speculative and irrelevant to the Commission's proposed rule (UDG p. 7). An industry representative commented that the requirement to verify submittals for NRC authorizations was inappropriate since some authorizations would not be needed as early as five years before operating license expiration; an alternative schedule for seeking such authorizations was suggested (AIF, p. 7). Finally, one respondent stated that licensee plans should only address spent fuel management up to the time when the material and title are delivered to DOE for disposal (SE2 p. 4).

(2) *NRC Response.* The Commission believes that the choice of five years prior to operating license expiration represents a reasonable timeframe for licensees to submit their spent fuel management plans.

Delaying a request for such plans until the license expiration is imminent would not permit the timely implementation of alternative actions in the event deficiencies in the plans are identified by the Commission. Time is needed to ensure that the proposed plans are consistent with the licensee's long range plans, such as decommissioning, and that the plans meet whatever requirements are involved in the transfer of title to spent fuel to the Secretary of Energy for disposal in a repository.

On the other hand, the Commission believes that a requirement for a licensee to develop spent fuel management plans a decade or two before license expiration would be unnecessarily restrictive and could even be counterproductive. Such premature plans would be likely to undergo several revisions to accommodate to changing circumstances and their usefulness would be questionable.

Premature shutdown or termination of a reactor's license which results in an unanticipated need for interim storage or disposal arrangements is not expected to be a generic problem. The Commission will consider the consequences of premature termination of operation, should such an event occur, on a case-by-case basis. Even if a reactor shuts down prematurely, it will still be required to comply with license requirements.

Premature shutdown of a reactor could not pose a problem for storage of spent fuel, because intermediate or long-term demands on the spent fuel storage facilities at a shutdown reactor (whether shut down prematurely or because of operating license expiration) will be limited by termination of spent fuel production. Any short-term need for storage would be related to the desirability of maintaining a full core reserve, which is not a safety issue.

AIF's concern that it may be inappropriate for a licensee to apply for all necessary NRC authorizations five years before license expiration has been taken into account by changing the third sentence of the proposed § 50.54(bb) to read "Where implementation of such actions require NRC authorizations, the licensee shall verify in the notification that submittals for such actions have been *or will be* made to NRC and shall identify them." (Emphasis added.)

Under the terms of the Nuclear Waste Policy Act of 1982, the Secretary of Energy will take title to spent fuel at a licensee's facility and transport the spent fuel to a repository for ultimate disposal. Because of this, each licensee's spent fuel management plans need only consider actions to be taken until the time of spent fuel transfer to the Secretary of Energy, rather than until the time of ultimate disposal. The final words of the first sentence of the proposed § 50.54(bb) have been revised to read ". . . until *title to the irradiated fuel and possession of the fuel is transferred to the Secretary of Energy for its* ultimate disposal in a repository." (Emphasis added.)

b. Plans for Funding Spent Fuel Management

(1) *Summary of Comments.* The proposed rule would require a licensee's notification to include plans for financing the management of all irradiated fuel upon expiration of the reactor operating license until the ultimate disposal of the fuel in a repository.

Some respondents believed that the funding for spent fuel management should be considered together with funding for decommissioning (e.g., UDG pp. 5–7; UNWMG–EEI, p. 5; Tol Ed; AIF p. 6). They contended that, if funding for spent fuel management were to be addressed separately from decommissioning, the Commission should recognize that utilities generally would be permitted by the rate-making authorities to recover costs associated with extended fuel storage (UDG p. 6; AIF pp. 7, 8). Moreover, since each utility will have to demonstrate to NRC its ability to finance decommissioning—which will involve far greater costs than the maintenance and monitoring of spent fuel storage—the funding required for post-operating license spent fuel management will be assured (UDG pp. 5–7; AIF pp. 7, 8). Others believe that the funding required for post-OL management of spent fuel would be assured because the utilities are financially responsible (UDG pp. 5–7; AIF pp. 7, 8); still others contended that if a utility operates a reactor, it should be required to have adequate funding set aside now to manage the spent fuel (UCS p. 3). On the other hand, some respondents expressed the view that, when the notification of plans is due, a utility might not wish to spend or even retain the funds required for spent fuel management (CNPP p. 1), e.g., Turkey Point, (FUSE p. 2).

(2) *NRC Response.* Following termination of reactor operation, actions to manage irradiated fuel stored on the plant site or to provide for its removal would include activities taken prior to and subsequent to decommissioning. In all cases after operating license termination, continued spent fuel storage at the nuclear power plant site would be subject to licensing under 10 CFR Part 50 or 72.

The suggestion that funding for decommissioning and spent fuel management be considered together would appear to offer no significant advantage. The costs of each are readily separable. Moreover, it is possible that rate-making authorities will treat cost recovery for decommissioning differently from costs of extended spent fuel storage, in which case separation of costs would be necessary. In addition, the scheduling of spent fuel storage and disposal is likely to depend primarily on factors not directly related to decommissioning such as irradiated fuel age, status of disposal facilities and availability of spent fuel transport casks. The Commission also notes that all reactor licensees have contracted with DOE for disposal of their spent fuel; further, any new reactor operating license will require that the licensee have a contract in place with DOE for disposal of all spent fuel generated.

c. Meaning of "Approval" of Plans for Spent Fuel Management

(1) *Summary of Comments.* The proposed 10 CFR 50.54(bb) provides for Commission "review and approval" of the licensee's spent fuel management plans. One respondent noted that there is no indication whether the NRC "approval" would take the form of an order or a license amendment and recommended that the concept of "approval" be eliminated from the rule (AIF pp. 6, 7). Others characterized formal approval as unnecessary (UDG p. 7) and burdensome (UNWMG–EEI, pp. 3–5; Tol. Ed.), or as creating "a new layer of approvals" (SE2 p. 3). It was suggested that the NRC staff review the plans, alert licensees to any deficiencies, and undertake formal approval only when action is taken to implement the plan through license amendments or other regulatory actions (AIF pp. 6,7; UNWMG–EEI p. 4).

(2) *NRC Response.* The Commission's review of each licensee's plans for management and ultimate disposal of all irradiated fuel at the reactor following operating license expiration is intended to assure that each licensee has made adequate advance preparations, including allowance for contingencies, for managing spent fuel in a manner which provides adequate protection of the public health and safety and the environment until it is transferred to the

Secretary of Energy for disposal. Because the plans would be developed at least five years prior to operating license expiration, they would be based on the utility's forecast of its future situation. Some utilities may have sufficient uncertainty in their forecasts to preclude an early firm commitment to details of a program for management of spent fuel after operating license expiration. Accordingly, the Commission will consider the notification to be submitted under § 50.54(bb) as a formal expression of intent. The notification is part of an information gathering process which is more specific, but similar in nature to the provisions of § 50.54(f), which states:

> The licensee will at any time before expiration of the license, upon request of the Commission submit written statements, signed under oath or affirmation, to enable the Commission to determine whether or not the license should be modified, suspended or revoked.

The provisions of § 50.54(bb) may be used by the Commission in determining if it needs to take any further action. The Commission's review will focus on the identification of discrepancies or omissions and its "approval" will signify that, based on the information available at the time of filing the notification, the licensee's plans are sound and will provide adequate protection of the public health and safety and the environment. Between the time the Commission indicates its preliminary approval of the plans and the date of expiration of the operating license, the licensee may propose for Commission consideration modifications or supplementation of its plans. In this way, prior to license expiration, the licensee will have developed a course of action which the Commission has approved as satisfying the regulatory requirements for safety and environmental protection. The plan would then, at license expiration and termination of reactor operation, become part of the conditions of an amended Part 50 license for a shut down reactor facility, or a Part 72 license for storage of spent nuclear fuel following termination of reactor operation.

In order to clarify the Commission's intent that the Commission's approval of the licensee's plans for spent fuel management is not a final approval, the word "preliminary" has been inserted before "approval" in the first sentence of the proposed § 50.54(bb) and the following sentence is inserted after the first sentence: "Final Commission review will be undertaken as part of the proceeding for continued licensing under Part 50 or Part 72."

d. Relationship of Extended Spent Fuel Storage to Decommissioning

(1) *Summary of Comments.* In view of the potential juxtaposition of actions to implement spent fuel management plans addressed in § 50.54(bb) and decommissioning plans, some respondents urged that promulgation of the former be considered in the decommissioning rulemaking (UDG pp. 3–6) or coordinated with the decommissioning requirements (UDG pp. 5–7; UNWMG–EEI p. 5; EPI p. 2; AIF pp. 5, 6; Pilalis p. 2; MSS p. 2). The concerns were that the two rules (§ 50.54(bb) and decommissioning) might be conflicting or duplicative with respect to site access, preferred decommissioning mode, and financing (Pilalis p. 1; AIF pp. 5, 6). The record of the decommissioning rulemaking was cited as providing support for the Commission's determination that the environmental and safety implications of extended storage of spent fuel need not be considered in licensing proceedings (AIF pp. 3, 4; UDG p. 5).

(2) *NRC Response.* Here again, the Commission considers the decommissioning process as a set of actions separate from those discussed in § 50.54(bb). To delay issuance of a rule for extended spent fuel storage in order to combine it with the decommissioning rule which is being developed would serve no useful purpose. The safety and environmental implications of the two processes differ significantly. Specifically, decommissioning involves many more complex considerations than post-OL spent fuel management plans. Although the two activities may overlap in time, they are so different that combining the associated regulatory requirements into a single rulemaking would have no apparent advantage.

Although there is a potential for overlap between the plans submitted in the § 50.54(bb) notification and the decommissioning plans, the overlap is most likely to be limited to scheduling aspects, e.g., situations where the presence of spent fuel in the reactor storage pool must be taken into account when considering decommissioning options. The Commission does not consider the potential for conflict from such overlapping activities to be sufficient to delay the present rulemaking until decommissioning regulations are in place. Clearly the utility must decide which decommissioning option it wishes to choose before operating license expiration. The utility's spent fuel management plans submitted in response to § 50.54(bb) and its choice of decommissioning options, should be consistent. Such consistency may be achieved by modifying either the decommissioning plan, the spent fuel management plan, or both.

3. Miscellaneous Comments

a. Recognition of Yakima Indian Rights

(1) *Summary of Comments.* The Yakimas stated that their sovereign rights cannot be properly protected by generalized rulemaking and that Federal rules must be based upon recognition of their treaty rights (YIN p. 2). They also contended that environmental impact analyses for siting nuclear waste storage and disposal facilities are based on value systems not related to those of affected Indian tribes (YIN, Enclosure 2). The Yakimas believe that environmental impact studies have consistently failed to look beyond the Judaeo-Christian socio-economic heritage and as a result there have been repeated nuisance violations of the sovereign rights guaranteed to the Yakimas by the Treaty of 1855 (YIN p. 2 of Attachment 2).

(2) *NRC Response.* This final rule does not concern repository siting, or the extended storage of spent fuel at any reactor located within the tribal lands. Siting will be considered under procedures laid out by the Nuclear Waste Policy Act (NWPA), DOE siting guidelines, and NRC regulations for high-level waste disposal (10 CFR Part 60). All of these recognize Indian rights in the siting of waste repositories and provide for participation by affected Indian tribes.

b. Extended Length of Time for Storage

(1) *Summary of Comments.* The Environmental Policy Institute states that the Commission may not assume that plants will be able to dispose of fuel in a repository on a schedule reflecting OL termination because the NWPA carries a presumption that significant repository capacity will be taken up by defense waste; moreover, section 135(e) of the NWPA requires that spent fuel in interim Federal storage must be moved within three years of the availability of permanent disposal of storage facilities. Furthermore, EPI notes that DOE proposes in its contracts to give priority to the oldest fuel (EPI pp. 2, 3). Pilalis adds that the contracts give priority to fuel from permanently shutdown reactors.

(2) *NRC Response.* The Commission notes that the various categories (e.g., wastes from commercial or defense activities) of high-level waste and spent fuel are addressed in the NWPA in a manner which assures that they will be dealt with or managed and disposed of with appropriate priorities. The NWPA mandates a Mission Plan from the Secretary of DOE (section 301(a)), which includes:

> . . . an estimate of (A) the total repository capacity required to safely accommodate the disposal of all high-level radioactive waste and spent nuclear fuel expected to be generated through December 31, 2020, in the event that no commercial reprocessing of spent nuclear fuel occurs, as well as the repository capacity that will be required if such reprocessing does occur, (B) the number and type of repositories required to be

constructed to provide such disposal capacity; (C) a schedule for the construction of such repositories; and (D) an estimate of the period during which each repository listed in such schedule will be accepting high-level radioactive waste or spent nuclear fuel for disposal: (section 301(a)(9)).

Thus the intention of the NWPA is to provide adequate repository capacity on a timely basis for all high-level radioactive waste and spent fuel and to take into account the various priorities for disposal established by the Act itself. The Commission notes in its Waste Confidence decision (elsewhere in this issue) that:

. . . sufficient repository capacity will be available within 30 years beyond expiration of any reactor operating license to dispose of commercial high-level radioactive waste and spent fuel generated up to that time. The Nuclear Waste Policy Act of 1982 establishes Federal responsibility and a clearly defined Federal policy for the disposal of such waste and spent fuel and creates a Nuclear Waste Fund to implement Federal policy. The Act establishes as a matter of national policy that this responsibility is a continuing one, and provides means for the Secretary of Energy to examine periodically the adequacy of resources to accomplish this end (Appendix to the Commission's decision [section 2.2B4]).

In any event, the Commission does not assume, as EPI contends, that plants will be able to dispose of spent fuel in a repository on a schedule corresponding to OL termination. The Commission's second finding states (in part) that sufficient repository capacity will be available within 30 years beyond OL termination. The priority that DOE proposes to follow in its contracts for acceptance of the oldest spent fuel does not affect this situation.

4. Non-Substantive Revisions in the Amendment to 10 CFR Part 51.

Non-substantive revisions were made in the amendment to Part 51 for clarification and to conform to the recently published (49 FR 9352, March 12, 1984, effective June 7, 1984, 49 FR 24512, June 14, 1984) general revision of 10 CFR Part 51 and related conforming amendments implementing CEQ NEPA regulations.

5. Listing of Participants

Respondents to the May 20, 1983 Invitation for Public Comment (48 FR 22730) on the Proposed Amendments to 10 CFR Parts 50 and 51, "Requirements for Licensee Actions Regarding the Disposition of Spent Fuel Upon Expiration of the Reactor's Operating License

1. New York Attorney General (NY Atty. Gen.)
2. Floridians United for Safe Energy (FUSE)
3. Toledo Edison Company (Tol. Ed.)
4. Environmental Policy Institute (EPI)
5. Utility Decommissioning Group (UDG)
6. Atomic Industrial Forum, Inc. (AIF)
7. Utility Nuclear Waste Management Group and the Edison Electric Institute (UNWMG—EEI)
8. Wisconsin (Wis.)
9. Middle South Services, Inc. (MSS)
10. Coalition for Nuclear Power Postponement (CNPP)
11. Union of Concerned Scientists (UCS)
12. Indiana Sassafras Audubon Society (ISAS)
13. Yakima Indian Nation (YIN)
14. Wisconsin Environmental Decade (WED)
15. Labros E. Pilalis (Pilalis)
16. New England Coalition on Nuclear Pollution, Inc. (NECNP)
17. Scientists and Engineers for Secure Energy, Inc. (SE2)
18. Susan L. Hiatt (Hiatt)
19. Mississippi Power and Light Co. (MP&L)
20. Department of Energy (DOE)
21. Consolidated Public Interest Representative (CPIR)

Respondents to the Commission's November 3, 1983 Order (48 FR 50746) To Reopen the Period for Limited Comment on the Environmental Aspects of the Commission's Fourth Finding in the Waste Confidence Proceeding

1. Attorney General of the State of New York (N.Y.)
2. Marvin Lewis (Lewis)
3. Sierra Club Radioactive Waste Campaign (Sierra)
4. Scientists and Engineers for Secure Energy, Inc. (SE2)
5. Safe Haven, Ltd. (S.H.)
6. American Institute of Chemical Engineers (AIChE)
7. Atomic Industrial Forum, Inc. (AIF)
8. Utility Nuclear Waste Management Group—Edison Electric Institute (UNWMG–EEI)
9. Natural Resources Defense Council, Inc. (NRDC)
10. Attorney General of the State of Wisconsin (Wis.)
11. U.S. Department of Energy (DOE)
12. American Nuclear Society (ANS)
13. Attorney General of the State of Minnesota (Minn.)

Environmental Impact

This final rule amends 10 CFR Part 51 of the Commission's regulations to incorporate the generic determination made by the Commission at the conclusion of the Waste Confidence rulemaking proceeding that for at least 30 years beyond the expiration of reactor operating licenses no significant environmental impacts will result from the storage of spent fuel in reactor facility storage pools or independent spent fuel storage installations located at reactor or away-from-reactor sites. The detailed environmental analysis on which the generic determination was based can be found in the record at that proceeding published elsewhere in this issue. This rulemaking action formally incorporating the generic determination in the Commission's regulations has no separate independent environmental impact.

The other amendments to Parts 50 and 51 of the Commission's regulations set out in the final rule contain procedures which relate to the submission and review of applications for licenses, license amendments and other forms of permission. The final rule specifies notification procedures applicable to licensee proposals for the management of irradiated fuel following expiration of a reactor operating license and the types of environmental information required to be submitted or addressed in connection with an application for a license or license amendment to store spent fuel at a nuclear power reactor or at an independent spent fuel storage installation after the reactor operating license has expired. Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(3). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

Paperwork Reduction Act Statement

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget (approval numbers 3150–0011 and 3150–0021).

Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act, 5 U.S.C. 605(b), the Commission certifies that this rule does not have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants. The companies that own these plants are dominant in their service areas and do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121.

List of Subjects

10 CFR Part 50

Antitrust, Classified information, Fire prevention, incorporation by reference, Intergovernmental relations, Nuclear

power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and record keeping requirements.

10 CFR Part 51

Administrative practice and procedure, Environmental impact statement, Nuclear materials, Nuclear power plants and reactors, Reporting and record keeping requirements.

For the reasons set out in the Preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, and 5 U.S.C. 553, the NRC is adopting the following amendments to 10 CFR Parts 50 and 51.

49 FR 35747
Published 9/12/84
Effective 9/12/84

Elimination of Review of Financial Qualifications of Electric Utilities in Operating License Review and Hearings for Nuclear Power Plants

See Part 2 Statements of ConSideration

49 FR 36631
Published 9/19/84
Effective 10/12/84

Elimination of Review of Financial Qualifications of Electric Utilities in Operating License Review and Hearings for Nuclear Power Plants

See Part 2 Statements of Consideration

49 FR 38534
Published 10/1/84

Elimination of Review of Financial Qualifications of Electric Utilities in Operating License Review and Hearings for Nuclear Power Plants

See Part 2 Statements of Consideration

49 FR 42693
Published 10/24/84

10 CFR Parts 50 and 51

Waste Confidence Decision

Correction

In FR Doc. 84–23182 beginning on page 34658 in the issue of Friday, August 31, 1984, make the following corrections:

1. On page 34663, column one, thirteenth line from the top, "his" should read "this".

2. On page 34667, column three, fifth line from the bottom, "investors" should read "investigators".

3. On page 34670, column one, paragraph designated as 2, line ten, "processing" should read "proceeding"

4. On page 34678, column three, first complete paragraph, line eighteen, "of the Congress" should read "to the Congress".

5. On page 34682, column three, first complete paragraph, line eight, "detective" should read "defective"; also in the second paragraph, line fourteen, "or" should read "on".

49 FR 42693
Published 10/24/84

10 CFR Parts 50 and 51

Requirements For Licensee Actions Regarding the Disposition of Spent Fuel Upon Expiration of Reactor Operating Licenses

Correction

In FR Doc. 84–23183 beginning on page 34688 in the issue of Friday, August 31, 1984, make the following corrections:

1. On the same page, column three, first complete paragraph, line fifteen, "extensive by" should read "extensively".

2. On page 34689, column one, line three from the bottom, "so" should read "no".

3. On page 34690, column two, paragraph designated as (1), line ten, "exporation" should read "expiration".

≫ **49 FR 45571**
Published 11/19/84
Effective: 11/19/84

10 CFR Part 50

Environmental Qualification of Electric Equipment; Removal of June 30, 1982 Deadline

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: In response to a ruling by the U.S. Court of Appeals for the District of Columbia Circuit ("D.C. Circuit"), the Commission published on March 7, 1984, a proposed rule deleting from power plant operating licenses a June 30, 1982, deadline for environmental qualification of electric equipment imposed by previous Commission order. After considering public comments received, the Commission is adopting the proposed rule as a final rule with a minor modification.[1] Licensees of operating power plants will therefore be expected to meet the schedule for environmental qualification set out in 10 CFR 50.49(g).

EFFECTIVE DATE: November 19, 1984.

FOR FURTHER INFORMATION CONTACT: William M. Shields, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: (301) 492–8693.

SUPPLEMENTARY INFORMATION:

I. Background

Events leading up to this rulemaking were summarized in the notice of proposed rulemaking, 49 FR 8445 (March 7, 1984), and in the Commission's Policy Statement issued that same day, 49 FR 8422. In the notice of proposed rulemaking the Commission stated the issue presented to be: "Whether the deadline of June 30, 1982, shall be deleted from every operating license in which it appears, leaving the compliance schedule for completing the environmental qualification of safety-related electric equipment set by 10 CFR 50.49."[2] The Commission also set forth in the notice of proposed rulemaking a special procedure whereby plant-specific comments would be referred to the staff for review and consideration of possible enforcement action. The Commission noted that it would consider any generic implications

[1] The Commission voted on September 4, 1984 to adopt the rule and an accompanying Statement of Consideration subject to the addition of separate views. Immediately thereafter, the Union of Concerned Scientists ("UCS") petitioned the Commission to reconsider its adoption of this rule. Under these circumstances, the Commission determined to review its action and to defer publication of the Statement of Consideration. While the Commission's review was pending, the D.C. Circuit directed the Commission to provide the Court a copy of the Final Rule and Statement of Consideration.

The Commission's review did not reveal any reasons for modifying the rule as adopted. Accordingly, UCS's petition is denied for the reasons stated in this modified Statement of Consideration which supplants the Statement of September 4, 1984. The Commission has forwarded a copy of this modified statement to the D.C. Circuit.

[2] Section 50.49(g) provides as follows:

(g) Each holder of an operating license issued prior to February 22, 1983, shall, by May 20, 1983 identify the electric equipment important to safety within the scope of this section already qualified and submit a schedule for either the qualification to the provisions of this section or for the replacement of the remaining electric equipment important to safety within the scope of this section. This schedule must establish a goal of final environmental qualification of the electric equipment within the scope of this section by the end of the second refueling outage after March 31, 1982 or by March 31, 1985, whichever is earlier. The Director of the Office of Nuclear Reactor Regulation may grant requests for extensions of this deadline to a date no later than November 30, 1985, for specific pieces of equipment if these requests are filed on a timely basis and demonstrate good cause for the extension, such as procurement lead time, test complications, and installation problems. In exceptional cases, the Commission itself may consider and grant extensions beyond November 30, 1985 for completion of environmental qualification.

resulting from review of plant-specific comments in deciding whether to delete the deadline for all plants. On August 7, 1984, in response to requests by some commentaters, the Commission extended the comment period to August 13, 1984. (49 FR 31432).

II. Public Comments

Twenty-two comments were received on the proposed rule. Nine favored adoption of the rule, twelve opposed the rule, and one comment discussed seismic issues not germane to the rulemaking. Of the nine comments favoring the rule, six were submitted by utility owners of power reactors, one by a law firm representing two such utilities, one by an individual, and one by the Nuclear Utility Group on Environmental Qualification, representing numerous power plant licensees. Of the twelve comments opposing the rule, five were filed by individuals , four by intervenor groups, one by the Harvard Law School Environmental Law Society, one by the Union of Concerned Scientists, and one by the State of Maine. The comment related to seismic matters was filed by an attorney representing Georgians Against Nuclear Energy.

Most of the comments pro and con were relatively succinct and stated arguments addressed by the Commission in its policy statement. Those favoring deletion of the deadline pointed to the fact that the task of environmental qualification of all safety-related electric equipment in nuclear power plants has proven to be a much more difficult and extensive task than was originally thought. These commenters noted that great progress had been made, both prior to and following the previous deadline, and that the schedule in 10 CFR 50.49 is a realistic approach to completing the program at all facilities. Those opposing deletion of the deadline were generally dissatisfied with progress to date, and in some cases urged retention of the deadline as a reminder that environmental qualification had not been completed on the schedule originally set by the Commission. These commenters did not generally urge that plants be shut down to complete the effort, but did feel that deletion of the deadline would encourage utilities to further delay environmental qualification. Three comments focused on equipment qualification at specific facilities.

The Union of Concerned Scientists filed a lengthy comment in which the following major points are raised. Commission responses follow each point.

1. The Atomic Energy Act requires the Commission to consider all comments bearing on whether issuance of the proposed license amendments would be inimical to the public health and safety.

Commission Response. The gravamen of this contention is that the Commission should not have stated, in the notice of proposed rulemaking, that the plant-specific comments would be treated via 10 CFR 2.206, because this tantamount to excluding evidence relevant to the rulemaking.

The Commission was quite clear in the notice of proposed rulemaking that comments which had a bearing only on a single facility were to be treated under 10 CFR 2.206 because the proposed rule was intended to lift an industry-wide deadline "set for purposes not directly related to safety." 49 FR 8445. However, the Commission also stated "that a number of comments, each raising issues about particular plants, would in the aggregate have a bearing on the Commission's proposal to eliminate the June 30, 1982, deadline." *Id.* The procedure outlined for staff review of plant-specific comments concluded as follows: "In deciding whether to make final the proposed elimination of the June 30, 1982 deadline, the Commission will consider the generic implications of the Director's preliminary judgments." *Id.* Thus, the Commission intended that all comments, both general and plant-specific, would be considered relevant to the final decision.

2. The stated basis for the proposed rule distorts the history of the environmental qualification issue and ignores the distinction between regulation and enforcement.

Commission Response. UCS argues that the Commission's characterization, in the notice of proposed rulemaking, that the June 30, 1982 deadline was not a "substantive safety standard" is erroneous. The Commission's position on this issue was set out at length in the notice of proposed rulemaking and accompanying Policy Statement, and has not changed. The June 30, 1982 deadline is not a substantive safety standard by which the safe operation of individual facilities was to be measured.

3. The rulemaking record cannot support the license amendments.

Commission Response. UCS contends that the rulemaking record is poorly organized, incomplete, and taken as a whole insufficient to support the issuance of a rule. UCS' position is that the rulemaking cannot be completed until licensee documentation has been received (as a result of recent staff-license meetings) and all final Safety Evaluation Reports been written, because "the Commission cannot amend reactor licenses . . without making a safety finding for each operating plant."

On the matter of the state of the record itself, the Commission and its staff have attempted to provide for public inspection all available material considered by the NRC. Several commenters requested and received specific records for individual facilities. The Commission believes that any interested person could have reviewed any documentation available for one or more plants within the comment period provided. Staff assistance was available whenever requested to locate specific data or to sort out complex files.

As for the substantial number of technical documents provided by licensees directly to the Franklin Research Center (FRC) for its review, but not provided to the NRC staff, the Commission believes that there was no legal requirement to make that documentation available for comment in this rulemaking. The technical documents relied on by the FRC were not necessary to the Commission's determination of the issue in this rulemaking, were not consulted by the Commission, and were therefore not part of the rulemaking record. The issue in this rulemaking was whether the June 30, 1982 deadline should be retained because either licensees were not diligently pursuing environmental qualification or because there were generic safety problems. The Technical Evaluation Reports ("TER") by the FRC, which are a part of the record, provided adequate documentation for resolving these issues. These TERs were based on the FRC's review of the technical documentation supplied to it by licensees. The identification of this technical documentation by FRC, together with the FRC's conclusions about the status of environmental qualification at the facilities being reviewed, was sufficient in itself to support the Commission's conclusion that licensees were diligently pursuing environmental qualification.

The TERs also evaluated the technical documentation and were the primary documents for the NRC staff's preparation of Safety Evaluation Reports ("SER"), also in the rulemaking record, which formed the basis for the Director of Nuclear Reactor Regulation's report to the Commission that there are no generic safety issues involving environmental qualification. Thus, the public had available to it all the material relied on by the NRC in resolving the issue presented by this rulemaking.

The issue of whether a plant-specific safety finding is involved for each facility has been discussed. The Commission has stated its position that the generic deadline was not a safety standard for each facility, and thus removing the deadline by rule does not require plant-specific findings.

4. There is no rational basis for the safety finding that is required to support the proposed license amendments.

Commission Response. In support of this argument, UCS restates many of the technical issues which were reviewed in

the Commission's Policy Statement. In UCS' view, the documentation supporting qualification of some equipment is inadequate and does not support continued operation of the facility. UCS also argues that the NRC review of qualification data has been insufficiently detailed to reach valid conclusions about the safety of the facilities.

UCS misreads the court's decision in *UCS* v. *NRC*, 711 F.2d 370 (D.C. Cir. 1983) to support its contention that plant specific safety findings are required to support deletion of the deadline. The court did not say that any such finding was actually necessary before the deadline could be deleted. Rather, the court found that because in its view the Commission had apparently made a generic safety finding to support the Interim Rule, the Commission had to provide an opportunity to comment on that alleged safety finding.

The Commission has now explained that it does not rely on plant-specific safety findings in the present rule. Nothing in *UCS* v. *NRC* requires such findings. Plant-specific safety findings are not required for these proposed license amendments because these amendments do not have the effect of authorizing any plant operation not previously authorized, after full consideration for safety, when the facility licenses were issued. As explained above, the deadline was not set as a safety matter or as a cutoff date beyond which reactors could no longer operate if all of their equipment was not qualified. Rather, the purpose of the deadline was to urge licensee compliance with the environmental qualification program. Accordingly, those proposed license amendments do not involve the technical issues associated with the qualification status of various pieces of equipment at nuclear power plants. The justifications for continued operation are relevant to the deadline only to the extent that they reveal whether licensees have considered the effects of deficiencies in a timely manner. The Commission's review of the record shows that licensees have been actively attaining compliance with the environmental qualification requirements. Thus, the purpose of the deadline has been achieved. If there are individual instances of safety problems, the Commission has adequate enforcement tools, including shutdown orders, to deal with such problems. Thus, deletion of the deadline does not affect public health and safety.

Furthermore, the Commission's staff is reviewing the qualification program at every operating facility and has also examined qualification data for many specific pieces of equipment. Where problems or deficiencies are identified, corrective action by the licensee is required. In some cases, a justification for continued operation (JCO) may be requested within a short time if facility operation is contemplated before the deficiency can be corrected. The proper remedy for any person disagreeing with the Commission's position on any given facility is to seek enforcement action via 10 CFR 2.206. One such petition has been received, filed by UCS, in regard to the emergency feedwater system at Three Mile Island Unit 1. The Commission's staff has reviewed the petitioner's allegation and found that the emergency feedwater system at Three Mile Island Unit 1 is environmentally qualified in accordance with 10 CFR 50.49. Therefore, the petition was denied.

UCS also alleged qualification deficiencies in four dockets, namely, Three Mile Island Unit 1, Kewaunee, San Onofre Unit 1, and Haddam Neck. These allegations will be dealt with in Section IV below.

III. Response To FUSE Comment And UCS Petition

One commenter, Floridians United For Safe Energy (FUSE), was highly critical of the Commission's prior actions on environmental qualification and requested that the Commission take 14 listed actions to correct the alleged deficiencies. These 14 actions are identical to those requested by the Union of Concerned Scientists (UCS) in a petition filed with the Commission of February 7, 1984. The Commission had decided that the first five of the 14 requested actions are relevant to this rulemaking, and accordingly, those issues will be stated and responded to below. The remaining nine issues have been dealt with separately as described in a letter to UCS.

Request 1. Direct the Staff to obtain immediately (within 10 days) from each nuclear power plant licensee and license applicant a report documenting the use of each deficient component listed in the UCS petition, and a detailed justification for continued operation pending qualification of the equipment. (The equipment listed was: solenoid valves, Barksdale pressure switches, Static-O-Ring pressure switches, ITT-Barton transmitters, Limitorque valve operators, Anaconda flexible conduit, Rockwell hydrogen recombiners, and O'Brien Electric Penetration Assembly, Model K Connectors.)

Commission Response. All of the above equipment highlighted by UCS have already been the subject of NRC Office of Inspection and Enforcement Information Notices. Licensees were required by 10 CFR 50.49 to identify all equipment remaining to be qualified, including the items cited by UCS where applicable, and to establish a schedule for qualification (which might involve analysis, testing or replacement) within the confines of § 50.49(g). If a licensee identifies unqualified equipment previously thought to be qualified, or overlooked in prior reviews, the licensee is required by § 50.49(h) to notify the Commission within 60 days if additional time may be needed to complete qualification.

Following receipt of the 10 CFR 50.49 submittals, the staff scheduled meetings with each licensee to discuss all remaining open issues regarding environmental qualification, and to identify the information necessary to issue a final safety evaluation report on environmental qualification for each facility. These meetings have been completed and the staff is now preparing an SER for each facility. Licensee approaches for resolving environmental qualification deficiencies include replacing equipment, performing additional testing and/or analysis, assembling additional qualification documentation, installing radiation shielding, and relocating equipment. Whenever equipment is identified which is not qualified for its application, the licensee has been required immediately to provide a justification for continued operation, if a justification had not been previously submitted. In a few cases where it appeared that licensee efforts had not been adequate, the staff has conducted an audit of licensee files and has made clear what steps need to be taken to demonstrate compliance with the Commission's environmental qualification requirements.

The Commission believes that this approach, which places the burden on licensees to complete environmental qualification on a reasonable schedule, is preferable to the ad hoc program proposed by UCS that could lead to delay in completion of the program at individual plants. In this area as in all other areas of NRC jurisdiction, the Commission relies on its licensees to carry out the regulatory requirements in a responsible manner, subject to NRC review and audit, and backed up by inspection and enforcement.

Request 2. Direct the staff to review this information within two weeks and make an independent determination as to whether there is justification for continued operation pending qualification of the equipment.

Commission Response. Even if the Commission were to receive all of the data covered by Request #1, the simple result implied by Request 2, *i.e., to determine whether* continued operation is or is not justifiable, would not obtain. As to each individual piece of equipment, at least the following steps must be carried out:

1. How is the item being used in the plant? For how long is it needed in an

accident situation? Does it provide a critical function or indication, or is it in the "like to have" category? Is it backed up by other pieces of equipment?

2. What environment will the item of equipment see in each of a number of accident scenarios? Will it see a harsh environment in accidents for which it is needed or desired? Can it provide its function prior to being overwhelmed by environmental conditions?

3. What do the test data show concerning the item? Is it unqualified only in respect to one parameter or several? By what margin is it unqualified? Has it failed in every test, or has it passed some and failed some? Is the test data reliable or is there reason to question its validity?

4. If the item is clearly unqualified in its application, what risk is represented by continued operation? Can compensating measures such as procedures or valve alignments, etc., be used until a qualified piece of equipment can be installed? When will a qualified item be available, and when could it be installed?

The answers to these questions are not immediately obvious from a cursory review of a few documents. In each case the expertise of a number of persons experienced in a variety of disciplines must be called upon. Additional data may be needed which may or may not be immediately available. A site visit might be necessary to gain a clear picture of the item's use, location, configuration, and importance to plant operations. Arguments may arise over the interpretation of test data.

In short, UCS has greatly oversimplified the process of environmental qualification of safety-related electric equipment in nuclear power plants as a straightforward one, where answers immediately turn out yes or no. If the matter were that simple, the Commission and its licensees would not have been struggling for some five years to complete the program. In many cases environmental qualification efforts are at the edge of modern technology and material science. Tests must be carried out under conditions which are difficult to create in the laboratory, and arguments arise over whether simulated conditions accurately represent the environment of a nuclear accident. Finally, reasonable disagreements can arise over the need for a piece of equipment, the environment it will see in an accident, the probability of that accident occurring over a brief period of time, and the consequences of equipment failure.

The Commission believes the phased but expeditious program mandated by 10 CFR 50.49 should continue. Where the staff feels that licensee efforts fall short of an acceptable level, action will be taken. Where information indicates that a serious, immediate safety hazard exists at a particular facility, prompt corrective action will be required including plant shutdown where necessary.

Request 3. Direct the staff at the conclusion of this review to order those plants for which adequate justification is not present to cease operation until the equipment in question is qualified or replaced.

Commission Response. As stated, if the Commission determines that plant operation is not justified with certain unqualified equipment, plant shutdown will be ordered. However, the Commission relies on licensees and its inspection program to report serious safety matters requiring immediate action.

Request 4. Provide a process for expeditious public comment on the Staff's determination and supporting submittals.

Commission Response. Whenever a licensee is requested to provide a justification for continued operation, the documentation is provided on the docket of that facility and is therefore available for public inspection. If any person believes that staff's acceptance of the licensee's position is in error, that person may request licensing action pursuant to 10 CFR 2.206.

Request 5. Commission may modify or affirm the Staff's action, taking into consideration public comments it has received.

Commission Response. If licensing action is sought on an individual facility pursuant to 10 CFR 2.206, the Commission has discretion under its rules to review the decision of the office director. *See* 10 CFR 2.206(c)(1).

IV. Plant Specific Comments

Four comments were filed which allege equipment qualification deficiencies at specific plants:

TMI, Kewaunee, San Onofre 1, Haddam Neck—UCS
Maine Yankee—Attorney General, State of Maine [3]
Pilgrim, Seabrook [4]—John F. Dougherty
Point Beach—Wisconsin's Environmental Decade

These comments have been reviewed by the NRC staff as provided in the notice of proposed rulemaking. The Director of Nuclear Reactor Regulation has found that the comments do not raise generic issues relevant to this rulemaking and has therefore recommended that these comments be treated according to 10 CFR 2.206. The Commission has agreed with this recommendation. The Director will review these comments according to the procedures specified in that regulation, and will take licensing action as he decides appropriate, if any. The status of environmental qualification at these facilities is set out below for information.

TMI–1

In response to the UCS 2.206 petition noted above, the staff has reviewed and evaluated the licensee's environmental qualification (EQ) program. Specifically, the qualification status of the emergency feedwater (EFW) system and electrical equipment associated with this system was assessed against the Commission's requirements and found to be in compliance. (DD–84–22).

As part of this effort, the staff met with the licensee and performed several audits of the licensee's EQ files. In response to the staff's findings during these audits, the licensee made substantial improvements in the EQ documentation for the EFW System and associated electrical equipment. The licensee is in the process of reviewing its EQ documentation for all other electrical equipment required to be qualified. The staff will audit the licensee's EQ documentation for several items of equipment other than the EFW system to ensure that the licensee's program complies with the Commission's requirements as set forth in 10 CFR 50.49.

Kewaunee

The staff has completed its Safety Evaluation Report for Kewaunee, and has concluded as follows:

1. Wisconsin Public Service's electrical equipment environmental qualification program complies with the requirements of 10 CFR 50.49.

2. The proposed resolutions for each of the environmental deficiencies identified in the February 2, 1983 SER and FRC TER are acceptable. There are no longer any outstanding justifications for continued operation for this facility.

San Onofre 1

This plant is currently not operating. The staff met with the licensee on December 20, 1983 to discuss resolution of the TER deficiencies. In order to ensure compliance with the Commission's requirements, this facility's EQ files were audited by the staff on October 2–4, 1984. Prior to return to service, the licensee is required to submit justifications for continued

[3] The State of Maine's comment also contains legal arguments which are responded to above in connection with the UCS comment and petition, and which the Commission has previously addressed in the notice of proposed rulemaking and accompanying policy statement issued March 7, 1984.

[4] Mr. Dougherty's comment regarding Seabrook did not deal with specific qualification deficiencies, but referred only to the licensee's financial difficulties. For this reason, Seabrook will not be discussed further below and will not be the subject of § 2.206 treatment.

operation for all equipment which is within the scope of 10 CFR 50.49 and not fully qualified.

Haddam Neck

The staff met with the licensee on April 10, 1984 to discuss the resolution of the TER deficiencies. During that meeting, the licensee informed the staff that the temperature elements, cited by USC as having deficient JCO, will be replaced with qualified elements by March 31, 1985 in accordance with an extension granted by the NRC staff. (The staff had previously reviewed and accepted the JCO for these elements.)

In regard to the in-core thermocouples cited by USC, the licensee stated during the April 10 meeting that these devices are now fully qualified and thus a JCO is no longer required. Upon receipt of a final submittal from the licenaee documenting the results of the April 10 meeting, the staff will prepare an SER reporting its evaluation, and will schedule a later audit of the licensee's EQ files to confirm compliance with the Commission's requirements.

Maine Yankee

The staff met with the licensee on April 4, 1984. The licensee's final submittal was dated May 31, 1984. The staff is now reviewing this submittal.

Pilgrim

The staff met with the licensee on May 22, 1984. The licensee made two submittals dated July 9, 1984 and August 3, 1984. The staff is now reviewing these submittals.

Point Beach Units 1 and 2

The staff has completed its Safety Evaluation Reports for both of these units. As to each unit the staff has concluded:

1. Wisconsin Electric's electrical equipment environmental qualification program complies with the requirements of 10 CFR 50.49.

2. The proposed resolution of each of the environmental qualification deficiencies identified in the December 22, 1982 SER and FRC TER are acceptable.

3. Continued operation until completion of the licensee's environmental qualification program will not present undue risk to the public health and safety.

The licensee's qualification files will be audited at a later date to confirm that all of the Commission's requirements have been met.

V. Decision on Final Rule

The Commission has reviewed the comments and does not find in them convincing arguments in favor of retaining the license condition deadlines. The Commission agrees with commenters who expressed impatience at the length of time which has already been devoted to the effort of achieving full qualification of safety-related equipment in nuclear power plants. The program has taken much longer than expected, and has involved difficulties and complexity not foreseen at the time the 1982 date was inserted in operating licenses.

However, the Commission believes that the approach most likely to accomplish completion of the program in the most expeditious and thorough fashion is that contained in 10 CFR 50.49. Under this program environmental qualification should be complete in calendar year 1985. The staff continues to monitor licensees' progress closely, and the Commission itself will maintain an active role in supervision of the program. For the present the Commission is satisfied that progress is adequate and that retention of the 1982 deadline on a generic basis would serve no purpose. Enforcement action will be taken on individual plants if circumstances warrant.[5]

The Commission is therefore adopting as a final rule the removal of the June 30, 1982, deadline from power plant operating licenses. In response to one of the public comments, which noted that some licensees may have license condition deadlines other than June 30, 1982, the proposed rule is being modified slightly by the addition of the words underlined: ". . . that the schedule in this paragraph supersedes the June 30, 1982, deadline, *or any other previously imposed date*, for environmental qualification of electric equipment contained in certain nuclear power operating licenses." Because the rule relieves a restriction, it is effective upon publication in the Federal Register pursuant to 5 U.S.C. 553(d)(1).

[5] In his separate views Commissioner Asselstine disavows his previous agreement with the Notice of Proposed Rulemaking and the Commission's Policy Statement. The Commission believes that this rulemaking record does not support such a change in position. In its Policy Statement, the Commission agreed that because the June 30, 1982 deadline was not intended as a cut-off date for operation, the establishment of that deadline did not contain an implicit judgment that operation beyond that date would require a safety finding. As the Commission's Policy Statement made clear, this rulemaking was conducted solely to respond to the remand in *UCS v. NRC*, 711 F.2d 370 (D.C. Cir. 1983) and should not be taken as an indication that the Commission had changed its mind to now believe that the 1982 deadline had plant-specific safety significance.

Nor does Commissioner Asselstine's reason for wanting to retain the deadline contradict the Commission's position. He states that "the Commission should retain [the deadline] as an effective enforcement tool to assure continued diligence by licensees in carrying out an effective equipment qualification program." Putting aside the issue of whether the Commission could even rely on this deadline as a basis for initiating enforcement actions at this late date, it is clear that Commissioner Asselstine would not use the deadline to enforce safety deficiencies, but would use it only for the purposes for which it was intended, *i.e.*, to assure licensee diligence in completing the environmental qualification. Thus, Commissioner Asselstine's reason for wanting to retain the deadline is not based on a difference over its intended use, but really on whether the record shows that the reasoning for imposing the deadline has been met. For the reasons given above, the Commission had found that the deadline accomplished its purpose: As a general matter, licensees are diligently pursuing effective environmental qualification programs. The fact that one facility, Three Mile Island, Unit 1 required additional prodding, prodding which the NRC staff reported as being successful, does not undercut the validity of this generic finding.

Regulatory Flexibility Act Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not have a significant impact on a substantial number of small entities. The rule affects only licensees of nuclear power plants. These companies do not fall within the scope of "small entities" as set forth in the Regulatory Flexibility Act or the small business size standards set forth in the regulations of the Small Business Administration, 10 CFR Part 121.

Paperwork Reduction Act Statement

This rule contains no information collection requirements subject to the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq.

Environmental Impact Statement

The promulgation of this rule would not result in any activity affecting the environment. The rule relates to the schedule for compliance with a rule and as such is procedural in nature for the purposes of environmental analysis. Accordingly, the categorical exclusion in 10 CFR 51.22(c)(3) applies and no environmental assessment need be prepared.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire protection, Intergovernmental regulations, Incorporation by reference, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Recordkeeping and reporting requirements.

Commissioner Asselstine's Comments on the Notice of Final Rulemaking Regarding the Removal of the June 20, 1982 Deadline From Operating Licenses for Environmental Qualification of Electrical Equipment

I cannot agree with the Commission's final rule to remove the June 30, 1982 deadline from nuclear powerplant operating licenses for the environmental qualification of electrical equipment. The Commission's final rule fails to provide the safety justification needed to remove the June 30, 1982 deadline from plant operating licenses and is not adequately supported by the record of this rulemaking. Moreover, commenters were not afforded a fair opportunity to comment on some of the information

that formed the basis for the NRC staff's safety judgments that plants without properly qualified electrical equipment can operate safely until ongoing equipment qualification efforts are completed. For these reasons, I conclude that the Commission should not remove the June 30, 1982 deadline from plant operating licenses at this time.

Implicit in the Commission's decision to impose a deadline for qualification of equipment is a safety judgment by the Commission that extended operation of nuclear plants without properly qualified equipment does not provide an adequate level of protection to the public health and safety. The June 30, 1982 deadline was intended to motivate licensees to pursue effective equipment qualification programs with due diligence, thereby correcting a widespread licensee recalcitrance in properly qualifying safety-related equipment. The Commission also set the deadline to ensure that safety related equipment was qualified within a reasonable period of time—two years.

In deciding to remove the June 30, 1982 deadline from operating licenses, the Commission has concluded: (1) That the purpose of motivating licensees to pursue effective equipment qualification programs with due diligence has been achieved; (2) that extended operation of the plants beyond the June 30, 1982 deadline without fully qualified electrical equipment will not pose an undue risk to the public health and safety; and (3) that there is no generic equipment qualification problem common to many plants, such that a generic solution such as the June 30, 1982 deadline should be retained. More than two years after the expiration of the June 30, 1982 deadline, it appears that the Commission does not have an adequate factual basis for any of these conclusions.

I originally agreed with the course the Commission takes in its rulemaking and with the issuance of a new equipment qualification rule and policy statement. However, my agreement was based on assurances from the NRC staff that licensees were diligently pursuing adequate qualification programs and that the NRC was conducting an in-depth review of the information provided by licensees to support their justifications for continued operation (JCO's) or findings of qualification. Upon detailed examination it appears that these assurances were optimistic at best.

At the time the Commission issued this rule in proposed form, the staff advised the Commission that all licensees were cooperating in pursuing effective environmental qualification programs. See, Transcript of January 6, 1984 Commission meeting, p. 118. Yet, the record of this rulemaking disclosed several instances within the past few months in which licensees have failed to pursue effective equipment qualification efforts with due diligence. See, Union of Concerned Scientists' comments, pp. 22, 48–66. Many of these instances were confirmed by the NRC staff during the Commission meeting to consider this final rule. See, Transcript of September 4, 1984 Commission meeting, pp. 32–35, 64–68. Moreover, in those instances in which the Commission now argues that the environmental qualification deficiencies at specific plants identified by commenters have been corrected, the description of how those deficiencies have been corrected is so general as to be meaningless. This is hardly surprising since the first version of the proposed final rule submitted to the Commission in August failed to address *any* of the plant-specific deficiencies identified by commenters on the proposed rule. Given the evidence of continuing instances of licensee recalcitrance and the hurried and superficial reviews of the plant-specific deficiencies identified by commenters on the proposed rule, there is no basis in this rulemaking record for concluding that all licensees are now pursuing effective environmental qualification programs with due diligence.

Nor is there a basis for the Commission's conclusion that continued operation of nuclear plants presents no undue risk to the public health and safety. Although the staff assures us that there has been improvement in recent months, to date a considerable amount of safety-related equipment still has not been shown to be properly qualified. See, Transcript of September 4, 1984 Commission meeting, pp. 71–72. Justifications for continued operation (JCO's) for virtually all plants were submitted by the licensees in 1981. Reviews of these JCO's by the NRC staff and its contractors have repeatedly identified errors requiring further justifications. Further, even in the case of the more recent JCO's, the staff's inquiry has largely accepted the assertions made by the licensee that its equipment is qualified, and except in a very limited number of cases, the staff has not performed the detailed examination of supporting documentation needed to verify independently that either the equipment is properly qualified or that there is an adequate justification for continued operation. See, Transcript of September 4, 1984 Commission meeting, pp. 69–72. Nor is there any reason to believe that an in-depth examination of the licensee's documentation will occur any time in the near future. In the very few cases where staff has begun such in-depth reviews the evidence indicates that licensee efforts have been inadequate. Thus, because there has been no in-depth review by the NRC, there is no reason to conclude, as the majority does, that there is indeed no generic problem with equipment. Rather, UCS's comments suggest that there may be generic problems with certain equipment, and the Commission has not adequately explained why the equipment identified indicates no generic problem.

Thus, the evidence indicates that all licensees are not diligently pursuing effective equipment qualification programs. The evidence also indicates that independent verification of the licensees' JCO's or assertions of qualification will not occur any time soon, and certainly not before the Commission's new deadline in 10 CFR 50.49 (March 31, 1985). Given this indeterminate state of affairs, the Commission lacks reasonable assurance that there will not in fact be extended operation of these plants with equipment unqualified to perform its safety related functions. Instead of eliminating the deadline, the Commission should retain it as an effective enforcement tool to assure diligence by licensees in carrying out an effective equipment qualification program.

Finally, it is clear that commenters were not afforded a fair opportunity to comment on the technical information that formed the basis for the licensees' assertions that equipment is properly qualified or for the JCO's. The Union of Concerned Scientists, for example, details a number of instances in which this information was not included in the rulemaking record. See, UCS comments, pp. 27–30, and UCS letter to Commission dated September 5, 1984. The absence of this information effectively denied commenters a fair opportunity to comment on the staff's judgments on equipment qualification and the JCO's.

The Commission majority explains that it was not legally required to make documents relied upon by Franklin Research Center (FRC) available for comment in this rulemaking. The majority explains that this documentation was not necessary to the Commission's determination of the issue in this rulemaking and that the staff's Technical Evaluation Reports (TER's) provided adequate justification for concluding that licensees are diligently pursuing environmental qualification and that there are no generic safety problems so that the June 30, 1982 deadline ought to be retained. The Commission's explanation misses the point. The Commission may have relied upon the FRC reviews in making its conclusions, but FRC in conducting the reviews upon which the Commission relies must have relied in turn upon the

documentation the Commission now says is not relevant to the rulemaking. Had the Commission itself conducted reviews of this documentation instead of contracting out to FRC the underlying documentation for the Commission's decision surely would have to be available for comment. The mere identification of information without providing an opportunity to inspect that information and challenge the bases for FRC's and staff's conclusions hardly amounts to a fair opportunity to comment.

For all of these reasons I cannot concur in the Commission's action. I would retain the June 30, 1982 deadline to be used as an enforcement tool to ensure that licensees have effective environmental qualification programs. Further, the Commission ought to be more diligent in conducting in-depth reviews of licensee documentation so that plants do not continue to operate for extended periods of time with the state of their equipment basically indeterminate.

49 FR 47823
Published 12/7/84
Effective 12/7/84

Minor Correcting Amendments

See Part 1 Statements of Consideration

≫ 50 FR 3498
Published 1/25/85
Effective 2/25/85

10 CFR Part 50

Hydrogen Control Requirements

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is amending its regulations to improve hydrogen control capability for boiling water reactors with MARK III containments and for pressurized water reactors with ice condenser containments. The amendments require improved hydrogen control systems that can handle large amounts of hydrogen during and following an accident. For those of the above reactors not relying upon an inerted atmosphere for hydrogen control, the rule requires that certain systems and components be able to function during and following hydrogen burning. The rule also requires affected licensees to submit analyses to the Commission in support of the previous two requirements. The rule is needed to improve the capability of the indicated types of nuclear power reactors to withstand the effects of a large amount of hydrogen generation and release to containment from an accident, as occurred at Three Mile Island. The new requirements will result in greater assurance that nuclear power reactor containments and safety systems and components will continue to function properly so that reactors can be safely shut down following a Three Mile Island-type of accident.

EFFECTIVE DATE: February 25, 1985.

FOR FURTHER INFORMATION CONTACT: Morton R. Fleishman, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone 301–443–7616.

SUPPLEMENTARY INFORMATION:

Background

The Commission has taken numerous actions to correct the design and operational limitations that were revealed by the accident at Three Mile Island, Unit 2 (TMI–2), which resulted in a severely damaged or degraded reactor core, in a concomitant release of radioactive material to the primary coolant system, and in a fuel cladding-water reaction causing the generation of a large amount of hydrogen. Included in these actions are several rulemaking proceedings intended to improve the hydrogen control capability of light-water nuclear power reactors.

On December 23, 1981, the Commission published in the **Federal Register** (46 FR 62281) a notice of proposed rulemaking on "Interim Requirements Related to Hydrogen Control," inviting written comments or suggestions on the proposed rule by February 22, 1982. A notice extending the comment period for an extra 45 days to April 8, 1982, including editorial corrections, was published in the **Federal Register** on February 25, 1982 (47 FR 8203). The notice concerned proposed amendments to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," which would have required that:

a. Each boiling water reactor (BWR) with a Mark III type containment and each pressurized water reactor (PWR) with an ice condenser type containment be provided with a hydrogen control system capable of handling an amount of hydrogen equivalent to that which would be generated if there were at least a 75 percent fuel cladding-water reaction without loss of containment integrity;

b. Each boiling water reactor and each pressurized water reactor that does not rely on an inerted atmosphere for hydrogen control be provided with safety systems needed to establish and maintain safe cold shutdown and maintain containment integrity that can function after the burning of substantial amounts of hydrogen; and

c. Analyses be performed for the reactor categories mentioned above to justify the hydrogen control systems selected and to assure containment structural integrity and survivability of needed safety systems during a hydrogen burn.

It should be noted that the proposed rule was not part of the separate, long-term rulemaking on degraded or melted cores (the "severe accident rulemaking") for which an advance notice of proposed rulemaking was published on October 2, 1980 (45 FR 65474) and which was the subject of the "Proposed Commission Policy Statement on Severe Accidents and Related Views on Nuclear Reactor Regulation," published in the **Federal Register** on April 23, 1983 (48 FR 16014).

General Comments

Twenty-eight persons submitted comments regarding the proposed amendments. The comments and the SECY paper noted above are part of the public record and may be examined and copied, for a fee, in the Commission's Public Document Room at 1717 H Street, NW., Washington, DC. A summary of the comments and a comment analysis are also available for inspection and copying, for a fee, in the Public Document Room.

The comments received have been carefully reviewed and evaluated during preparation of this final rule. The final rule contains revisions to the proposed rule that reflect consideration of these comments. The commenters generally provided many specific comments on all aspects of the proposed amendments. The following discussion represents a distillation of the more significant comments.

Numerous commenters suggested that the implementation of the Hydrogen Control Rule should be deferred until the severe accident rulemaking (see above) when applicable research and probabilistic risk analyses (PRAs) will be completed. The Commission agrees with these comments relative to PWRs with large, dry containments. Dry containment designs have a greater inherent capability to accommodate large quantities of hydrogen because of their high design pressure and large volume; therefore, for these designs the Commission believes that rulemaking with regard to hydrogen control can be safely deferred pending completion of NRC- and industry-sponsored research

which includes studying the effects of hydrogen burning at higher concentration to determine effects on equipment survivability. Furthermore, with regard to systems and components that must be able to function during and following hydrogen burning, the fact that TMI–2 was shut down and maintained in a shutdown condition indicates that such systems and components did generally perform their functions following the burn event. In addition, design improvements that have been implemented as a result of NRC directives have served to reduce the likelihood of a degraded core accident.

With regard to BWRs with Mark III containments and PWRs with ice condenser containments, the Commission believes that these containments can safely accommodate the burning in a single event of the hydrogen from about a 25 percent metal-water reaction.[1] However, since the TMI–2 accident showed that a 45–50 percent metal-water reaction was possible, the Commission believes that it is necessary to enhance the hydrogen control capability for reactors with these types of containments and that new regulations are required to ensure that the proper design features are incorporated. Adoption of the final rule will also formalize Commission regulatory decisions currently being applied on a case-by-case basis in individual licensing proceedings and will provide the needed basis for regulatory actions that cover licensing and continued operation of the affected plants.

Several commenters stated that the 75 percent metal-water reaction required to be assumed for design and analysis is unreasonably high based on evaluation of the TMI–2 accident and analyses of recoverable degraded core accidents.[2] The 75 percent metal-water reaction chosen by the Commission is greater than that which occurred during the TMI–2 accident; however, the primary intent of the rule is to require containment designs that can accommodate accident sequences in which hydrogen combustion poses a significant threat to containment integrity. Consquently, the Commission believes it is prudent to specify a value sufficiently greater than that which was estimated to have occurred at TMI–2 so that there will be an appropriate margin of safety. The Commission feels confident that the 75 percent value is representative of a limiting case degraded core accident (beyond which a core melt is expected to occur under all circumstances). Finally, the Commission sees no significant benefit in reducing the metal-water reaction to a level such as 50 percent for those plants having Mark III and ice condenser containments since the basic design of the heretofore chosen igniter system would not change.

A number of commenters recommended that the requirement for a hydrogen control system be revised to permit licensees the option of demonstrating analytically that additional hydrogen control systems are not necessary because of intrinsic design capabilities that reduce the likelihood of hydrogen generation. While it is true that design features to reduce hydrogen generation are necessary and desirable, the Commission still believes that, in order to cope with unexpected events, there should be a solution to the hydrogen issue that involves design features that ensure containment integrity, even if a large amount of hydrogen is generated. Thus, while measures to prevent the generation of large amounts of hydrogen are necessary and desirable, the Commission believes that it is also necessary, depending upon containment design, to provide measures to mitigate the effects of large amounts of hydrogen.

Some commenters indicated that, since the primary function of the containment is to prevent excessive radiation dose to the public, the rule should be modified to preclude the loss of containment function rather than to preclude the loss of containment intergrity. The Commission appreciates the fact that some nuclear plants are designed with a multi-building, multi-barrier concept that is intended to prevent the leakage of radiation by diverse methods such as filtering and scrubbing mechanisms, plate-out mechanisms, and containment sprays. However, the Commission's safety philosophy remains the same; namely, the containment should be designed to remain intact following a recoverable degraded core accident in order to provide additional assurance that excessive radiation will not be released. In other words, the Commission reaffirms its policy that the prevention of excessive radiation dose to the public can best be assured by maintaining a leak tight containment and that this, in turn, can be provided by assuring that there is structural integrity with margin.

Some commenters stated that the criterion for containment structural integrity is unnecessarily restrictive. They stated that it should not be limited to the provisions of the ASME Boiler and Pressure Vessel Code, but should permit the use of other methods such as realistic analyses using actual material properties. The Commission agrees with this comment and has modified the rule in this regard. Section 50.44(c)(3)(iv) has been changed to indicate that "containment structural integrity must be demonstrated by use of an analytical technique that has been accepted by the NRC staff." The rule includes two alternative methods as examples but does not preclude other methods that may be shown to be acceptable to the Commission. Finite element analysis would be acceptable for use with the methods considered.

It was suggested by some commenters that the rule should address only non-inerted, small-volume, low-pressure containments and should not impose requirements for the remaining containments since, for these containments, it would provide, at best, insignificant improvements in safety. The Commission agrees for the reasons indicated above; therefore, as indicated previously, it has revised the rule to apply only to Mark III BWRs and ice condenser PWRs.

A number of commenters stated that the rule ignores those post-TMI suggested improvements which have been implemented and which reduce the likelihood of a degraded core accident. In the case of PWRs with large dry containments, as discussed above, the Commission believes that the post-TMI improvements, along with the inherent strength of the containments, have indeed provided sufficient safety to permit the delay of any additional rulemaking until completion of ongoing research programs.

It has been recommended that in view of the small probability of occurrence of local detonations as a result of various design features, the rule should permit licensees the option of demonstrating that local detonations cannot occur in lieu of evaluating the effects of local detonations. The Commission agrees and has modified paragraphs

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[1] The basis for this belief is contained in SECY 80–107, "Proposed Interim Hydrogen Control Requirements for Small Containments," February 22, 1980, which is available for inspection and copying for a fee at the Commission's Public Document Room at 1717 H Street, N.W., Washington, D.C.

[2] See the following studies, available for inspection at the Commission's Public Document Room at 1717 H Street, NW, Washington, D.C. Also NUREG and NUREG/CR publications may be purchased from the NRC/GPO Sales Program by calling (301) 492–9530.

NUREG/CR–2540, "A Method for the Analysis of Hydrogen and Steam Releases to Containment During Degraded Core Cooling Accidents," February 1982.

NUREG/CR–1219, "Analysis of the Three Mile Island Accident and Alternative Sequences," January 1980.

"Report on Hydrogen Control Accident Scenarios, Hydrogen Generation Rates and Equipment Requirements," Rev. 1, July 1982—Submitted by the BWR/6 MARK III Hydrogen Control Owners Group.

50.44(c)(3)v) and (vi) of the rule appropriately.

Many commenters indicated that they believe the requirement that systems and components that can function after a hydrogen burn be provided for "safe cold shutdown" is unnecessary and is inconsistent with the licensing basis for most operating plants which requires only "safe shutdown". Those commenters felt that the safe shutdown criterion should not be an issue with regard to hydrogen control, but that it should be considered in another forum. Because of the fact that a degraded core accident is less likely than a design basis accident, the Commission agrees that the requirement for cold shutdown may be overly conservative. The licensing basis for most plants is, in fact, just safe shutdown. The reference to cold shutdown has been deleted from the rule; but the Commission notes that the issue of safe shutdown versus safe cold shutdown has not yet been resolved. The issue is expected to be addressed within the context of the resolution of Unresolved Safety Issue (USI) A–45, "Shutdown Decay Heat Removal Requirements," which is the subject of current NRC staff effort.

Several commenters have suggested that the implementation schedules should be made more realistic so that design changes logically follow after the required analyses are completed. The Commission agrees. The greatest relief, of course, has come by deferring implementation of the rule for PWRs with large dry containments. However, the rule has also been revised to specify that each applicant and licensee subject to the rule shall propose a schedule, to the Commission, for meeting the requirements. A final schedule for implementing the requirements shall be established by the NRC staff either in accord with a previously approved integrated scheduling system or by accounting for the relative safety priorities and required licensing actions of each case. For those applicants about to receive an operating license the hydrogen control system must be installed and operational prior to operation of the reactor in excess of 5 percent power; however, a completed final supporting analysis may be delayed provided a preliminary analysis has been provided and found acceptable by the NRC staff. Furthermore, if the NRC staff has previously determined for similar plants referenced in this rulemaking that similar hydrogen control systems are acceptable, they may, until the preliminary analysis is completed, also find the hydrogen control system acceptable.

Some commenters noted that in the Supplementary Information accompanying the proposed rule it was stated that the selection of the hydrogen control system should be supported by comparative analysis of alternative systems to show their relative advantages and disadvantages. They stated that this guidance is inconsistent with Commission practice and is unnecessary. They felt that the only requirements should be a demonstration that the selected system is suitable for its intended application.

The Commission agrees that this guidance was inconsistent with Commission practice in the case of operating reactors and reactors for which operating licenses are about to be issued in the near-term. In the final rule, § 50.44(c)(3)(vi) has been modified to delete the implication that comparative analyses are required and to indicate that the analysis is intended to support the design of the hydrogen control system that is selected. Comparative analyses of alternative systems are not required.

Hydrogen Control Systems [§ 50.44(c)(3)(iv)]

As originally proposed, applicants and licensees with boiling water reactor (BWR) facilities with Mark III type containments and pressurized water reactor (PWR) facilities with ice condenser type containments, for which contruction permits were issued prior to March 28, 1979, are required to install hydrogen control systems capable of accommodating an amount of hydrogen equivalent to that generated from the reaction of 75 percent of the fuel cladding (surrounding the active fuel region), with water, without loss of containment integrity. The particular type of hydrogen control system to be selected is left to the discretion of the applicant or licensee; however, the NRC must find it acceptable based upon suitable programs of experiment and analysis. The design of the selected system must be supported by the analyses which are to be submitted as part of the analyses required under § 50.44(c)(3)(vi). The system that is proposed and approved must safely accommodate large amounts of hydrogen, and operation of the system, either intentionally or inadvertently, must not further aggravate the course of an accident or endanger the plant during normal operations. As discussed previously, the amount of hydrogen to be assumed in the design of the hydrogen control system is that amount generated when 75 percent of the fuel cladding surrounding the active fuel region reacts with water.

As discussed above, the limited method proposed to demonstrate containment structural integrity has been expanded. Containment structural integrity may now be demonstrated by use of an analytical technique that has been accepted by the NRC staff. For example, finite element analysis is one acceptable technique for use with the methods considered. One of the acceptable methods is the use of the applicable ASME Boiler and Pressure Vessel Code. However, the Commission will accept other methods, provided that convincing evidence is presented regarding their suitability.

Other changes from the proposed rule are the relaxation of the implementation schedule to one that has been mutually agreed upon by the licensee and the NRC staff, and the elimination of the word "cold" in the phrase "safe cold shutdown."

Systems and Components [§ 50.44(c)(3)(v)]

At the time the proposed rule was issued for comment, the Commission indicated that it was considering a two-step approach to address "qualification" (as defined below) of those systems and components that must be able to function during and after a hydrogen burn. For the reasons explained below, the Commission did not choose this two-step approach. As the proposed first step, there would have been a demonstration that these systems and components could "survive" the hydrogen burn and continue to be able to perform their safety function. This step would not have entailed that these systems and components actually be qualified pursuant to NRC's qualification program. The proposed second step would have entailed the actual "qualification" of these systems and components. The conceptual differences between systems and components demonstrated to be "survivable" and systems and components demonstrated to be "qualified" were also described.

The Commission specifically sought comments on the use of the two-step approach for defining standards, on the "survivability" and "qualification" approaches themselves, and on proposals for implementation schedules. There were numerous comments in response to this request. The overwhelming reaction was that the two-step approach to reaching a survivability determination is unwarranted and will unnecessarily escalate the costs to industry. Many commenters felt that a straightforward

survivability approach would be appropriate provided reasonable guidelines are specified. In view of the smaller likelihood of a degraded core accident as compared to a design basis accident, which has been reduced further by post-TMI improvements, the Commission has decided to forego the two-step approach previously described. The Commission now believes, in view of the recent issuance of 10 CFR 50.49, "Environmental Qualification of Electrical Equipment Important to Safety," that there is no significant difference between demonstrating survivability and demonstrating qualification. Paragraph (f) of § 50.49 describes several methods, one of which must be used, for qualifying electrical equipment important to safety. For example, for those licensees which have already demonstrated survivability, as described in the Supplementary Information of the notice of proposed rulemaking for this rule on hydrogen control requirements (46 FR 62281, Dec. 23, 1981), the qualification methods described in paragraph (f)(2) and (f)(4) of § 50.49 could be used to show that the systems and components have been qualified. In this regard, the margins considered adequate for a degraded core accident are less than those considered adequate for a design-basis accident due to the lower probability of occurrence of a degraded core accident.

The Commission now views "qualification" as the generation and maintenance of evidence using tests and analyses to assure that systems and components will operate on demand to meet system performance requirements. In the case of a hydrogen burn environment, this means that there must be adequate evidence that systems and components necessary to establish and maintain safe shutdown and to maintain containment integrity are capable of performing their functions during and after exposure to the environmental conditions created by the postulated accident, including the burning of hydrogen. Qualification may be demonstrated in a manner acceptable to the Commission using a combined approach of analysis and testing. Thus, an acceptable thermal analysis would have to be performed for the containment in order to determine the thermal response of the components during a hydrogen burn. This thermal response should then be compared to the thermal response the components had during their qualification testing. The licensee should then demonstrate that the qualification thermal response envelopes the thermal response during a hydrogen burn. Selected tests should also be performed at predicted hydrogen burn conditions (or, other tests previously performed may be referenced if demonstrated to be applicable) to reasonably assure the Commission that the systems and components are qualified to perform their functions during and following a hydrogen burn. The demonstrations of survivability accepted by the staff for Sequoyah and McGuire without more testing, analysis or documentation are equivalent to demonstrations of qualification for a hydrogen burn event, and the staff does not require any other submittal from the licensees except for the previously identified confirmatory items.

Paragraph 50.44(c)(3)(v) applies to those Mark III BWRs and ice condenser PWRs that do not have an inerted containment atmosphere for hydrogen control. At present, this includes all Mark III BWRs and ice condener PWRs, since no applicant or licensee has as yet elected to use the inerting option for these plants. The systems and components that must be qualified for a hydrogen burn are those needed (a) to shut down the reactor and bring it to and maintain it in a safe shutdown condition, and (b) to prevent loss of containment integrity. These systems and components can be further categorized as follows:

a. Systems and components mitigating the consequences of the accident;

b. Systems and components needed for maintaining integrity of the containment pressure boundary;

c. Systems and components needed for maintaining the core in a safe condition; and

d. Systems and components needed for monitoring the course of the accident.

As discussed previously, these systems and components are described as bringing the reactor to "safe shutdown" rather than "safe cold shutdown." Furthermore, the schedule for implementation has been changed to one that has been mutually agreed upon by the licensee and the NRC staff. Finally, the rule has been revised to indicate that the environmental conditions to be assumed for a hydrogen burn do not have to include the effect of local detonations if it is shown to the Commission's satisfaction that local detonations are unlikely to occur.

Analyses [§ 50.44(c)(3)(vi)]

In the proposed rule, the Commission included a description of three different approaches concerning the supplementary guidance to be provided for performing the required analyses for the design of the hydrogen control system. These were (a) analyses of different accident scenarios, (b) analyses of a single accident scenario with variation of key parameters, and (c) analyses using an "envelope of time histories of hydrogen and steam release rates" to be supplied by the Commission. The Commission requested comments concerning which of the approaches was preferred as well as suggestions regarding improvements or other alternatives.

There was no preponderance of comments leaning toward a particular approach; however, the first two approaches appeared to have greater support. Furthermore, many commenters felt that there should be flexibility in the approach to be used in the selection of the accident scenarios. It was also suggested that the accident scenarios should be considered in order of importance using PRA techniques.

Based on the comments received and in consideration of the improved calculational data base now available, the Commission has decided to adopt the second approach; applicants and licensees need not use the first or third approaches.

In the selected approach, a base sequence will be identified by the licensee or applicant based on the hydrogen threat to containment integrity. Key aspects of this sequence should then be parametrically varied by the licensee or applicant in determining the acceptability of the containment response. This will provide a wider range of parameters than that of the selected base sequence alone. The acceptability of the analyses used in this approach depends on the selection and range of the parameters being varied. A range must be chosen which includes the effects of recovery from the degraded condition. It is expected that each applicant or licensee will review its analytical approach with the NRC staff and arrive at a mutually agreeable method for performing the analyses.

As an example, in the recent Sequoyah case [3], the applicant based its initial analysis on an accident sequence involving a small break LOCA followed by loss of ECCS (S_2D), with a typical average hydrogen release rate of about 20 pounds per minute, which the NRC staff considered to be representative of the accident. However, several concerns remained open. Among these were the possibilities that: (1) Other scenarios might present schedules of steam and

[3] NUREG–0011, Supplement No. 6, "Safety Evaluation Report Related to the Operation of Sequoyah Nuclear Plant, Units 1 and 2," November 1982. Available for inspection at the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C.

hydrogen release not covered by the analysis chosen; (2) steam inerting might occur at some time during the sequence allowing large concentrations of hydrogen to develop; (3) the recovery period might produce an exceptionally large burst of steam or hydrogen; and (4) hydrogen might be released after the loss of the ice heat sink.

In the Sequoyah case, the applicant broadened the studies to include higher rates of steam and hydrogen release and release after the ice melted. The broadened calculations included hydrogen releases rates as high as 6 lb. per second under representative steam conditions, with and without ice. It was shown that a representative selection of scenarios would be bounded by the broadened release rates, including an intermediate break LOCA with loss of ECC (S_1D), a small break LOCA with loss of containment heat removal (S_2G), a transient loss of main feedwater and loss of all AC power (T_aB_2), and a transient loss of main feedwater, loss of auxiliary feedwater and loss of the ECC (T_aLD). The staff concluded that the coverage of these additional scenarios was sufficient to assure that the hydrogen associated with a representative group of degraded core situations could be managed acceptably using the ignition systems.

As another example, in the McGuire case [*], hydrogen release rates up to 4.3 lb. per second under representative steam conditions were considered and the S_2D releases were analyzed with and without ice. The results were considered acceptable by the staff.

The staff has accepted ac-powered igniters without requiring a backup power supply in the two examples cited above. This judgment was based upon the staff's perception that the incremental risk reduction associated with provision of the igniter system backup power supply did not warrant the additional cost at these particular facilities. Provision of a backup power supply is not required by this rule.

It is apparent that applicants and licensees with conceptually different reactors may have to address other scenarios. The appropriate details for Mark III BWRs, for example, are currently being worked out through interaction between the NRC staff and applicants.

Previously approved generic or reference analyses may be employed in lieu of plant specific anlayses where the generic analyses can be shown to be applicable. It is believed that the adoption of the above approach will eliminate the need for repetitive calculation of accident scenarios.

Dissenting Views of Commissioner Asselstine

I vote to approve publication of the Commission's final hydrogen control rule on December 10, 1984, and I continue to support the version of the rule that was approved unanimously by the Commission on that date. However, I cannot support the Commission's final rule being published today because of a significant substantive change in the rule that was made by my colleagues at the eleventh hour.

The change adopted by the Commission majority adds the following new sentence to the implementation provisions of § 50.44(c)(3)(vii)(B) of the rule:

> However, the record in this rulemaking shows that such preliminary analyses are not necessary for a staff determination that a plant is safe to operate at full power if the staff has determined for similar plants, referenced in this notice of rulemaking, that similar systems provide a satisfactory basis for a decision to support operation at full power until the preliminary analyses have been completed.

Under this provision, so long as the license applicant's plant is similar to the Sequoyah and McGuire plants (the two ice condenser pressurized water reactor plants referenced in this notice of rulemaking with staff-approved hydrogen control systems) and uses a hydrogen control system similar to the igniter systems used in those two plants, the applicant need not submit, and the NRC staff need not approve, a preliminary analysis of the adequacy of the hydrogen control system prior to the full-power operation of the plant. The practical effect of this new sentence is to deny intervenors in some nuclear powerplant operating license proceedings the opportunity for a hearing on the adequacy of the hydrogen control measures and analyses supporting interim operation of these plants. The immediate purpose of this change is to bolster the Commission's litigation position concerning the handling of hydrogen control issues in one such proceeding—the operating license proceeding for the Catawba plant—the only plant to which this sentence appears to apply.

There are two problems with the Commission majority's actions that lead me to disapprove the revised rule. First, members of the public were not afforded a fair opportunity to comment on the option of using the Commission's final hydrogen control rule as means to eliminate the opportunity to litigate the adequacy of hydrogen control systems and analyses in individual nuclear powerplant operating license proceedings. The Commission's proposed rule published for comment on December 23, 1981 would not have affected the opportunity of intervenors to obtain a hearing on the adequacy of hydrogen control systems and analyses to support interim plant operation, and neither the Commission's proposed rule nor the accompanying supplementary information made any mention of this possibility. To the contrary, the supplementary information on the proposed rule, although stating the Commission's general conclusion that there is sufficient information available to warrant interim approval of deliberate ignition systems for ice condenser plants, emphasized the need for individual licensees to demonstrate certain plant-specific elements, including the ability of essential equipment to continue to function during and after a hydrogen burn. Moreover, the supplementary information clearly recognized that the adequacy of hydrogen control systems for certain types of plants (those with ice condenser and Mark III containments) is a significant safety issue affecting full-power operation of these plants. Thus, the proposed rule when read together with the Commission's contemporaneous practice of allowing case-by-case adjudication of hydrogen control issues clearly did not put anyone on notice that the Commission might use the rule to prohibit litigation of this issue in proceedings. The Commission, then, effectively denied members of the public the opportunity to comment on this significant aspect of the final rule.

Second, it is inappropriate for the Commission to use this rulemaking in an effort to bolster its litigation position in the *Catawba* operating license proceeding. The Commission's interest in using this rulemaking proceeding to restrict the case-by-case litigation of hydrogen control issues only developed after the Commission became aware of a potential litigation problem in the *Catawba* operating license proceeding caused by the Licensing Board's refusal to allow intervenors to litigate the adequancy of the Catawba hydrogen control system and analyses supporting interim operation of the plant. The Commission is again tailoring a generic rulemakinig to solve a case-specific litigation problem. Further, this last-minute effort to provide another basis for rejecting the intervenor's hydrogen

[*] NUREG–0422, Supplement No. 7, "Safety Evaluation Report Related to Operation of McGuire Nuclear Station Units 1 and 2," May 1983. Available for inspection at the Commission's Public Document Room at 1717 H Street, NW, Washington, D.C.

control contentions in the *Catawba* case is inappropriate and unseemly, and represents still another example of the Commission's hostility to public participants in our licensing proceedings. For the foregoing reasons, I cannot support the revised rule being published by the Commission today.

Apart from these concerns, there are two other deficiencies in the final rule that I would have corrected. However, these two further deficiencies would not have led me to disapprove the rule. First, the rule is limited to boiling water reactors with Mark III containments and pressurized water reactors with ice condenser containments, and fails to include pressurized water reactors with large dry containments. For the reasons set forth below, I believe that the portions of the rule dealing with equipment survivability and containment integrity should apply to pressurized water reactors with large dry containments as well.

This rule establishes a 75 percent metal-water reactor level as the prudent standard to be assumed for the design and analysis of hydrogen control systems that are necessary to ensure no undue risk to the public health and safety. A fundamental element in setting the 75 percent metal-water reaction limit is the assumption that sufficient equipment will survive a hydrogen burn or detonation to arrest the course of the accident and thereby prevent a degraded core accident from proceeding to an accident involving melting of the reactor core—an accident that could involve the generation of much more hydrogen than would be associated with a 75 percent metal-water reaction. In addition, the rule adopts as a principal objective maintaining a leak tight containment following a hydrogen burn or detonation.

At the same time, the rule recognizes that a hydrogen burn or detonation in the containment could damage equipment, cables or penetrations in a manner that would impair or eliminate the capability to arrest the accident or that would result in the loss of containment integrity. For this reason, the rule requires in § 50.44(c)(3)(v) that licensees for plants covered by the rule demonstrate that equipment needed to establish and maintain safe shutdown and to maintain containment integrity will survive a hydrogen burn.

These concerns regarding the survivability of equipment, cables and penetrations following a hydrogen burn apply with equal force to pressurized water reactors with large dry containments. The systems and components necessary to establish and maintain safe shutdown capability and containment integrity for reactor designs in large dry containments are essentially the same as those systems and components in the plants with ice condenser containments. Similarly, the potential for the generation of hydrogen from a 75 percent metal-water reaction is essentially the same in plants with large dry and ice condenser containments. In addition, the systems and components in plants with large dry containments are at least as susceptible to damage from a hydrogen burn produced in a 75 percent metal-water reaction as are the systems and components in plants with ice condenser containments. In fact, given that large dry containments will have no required hydrogen control system to cope with large quantities of hydrogen, higher concentrations of hydrogen can be formed in large dry containments before a random event ignites the hydrogen than would be the case for plants with ice condenser containments and a hydrogen control system. Thus, the environmental conditions in large dry containments could be more challenging than those in the plants with ice condenser containments.

For these reasons, I would have applied the equipment survivability and containment integrity provisions of § 50.44(c)(3)(v) to pressurized water reactors with large dry containments as well. Additional research may well be useful in confirming the accuracy of licensees' analyses on equipment survivability and containment penetration performance, but this ongoing research should not serve as an excuse for delaying the imposition of the equipment survivability and containment integrity requirements of the rule for plants with large dry containments.

Second, I would have revised the rule to specify that the hydrogen control systems required by the rule be automatically initiated based upon plant parameters deemed acceptable by the NRC staff. This change would have eliminated the need to rely on operator action to activate the hydrogen control system.

Chairman Palladino's Statement on Hydrogen Control Rulemaking

I have the following comments regarding the dissenting views of Commissioner Asselstine:

Notice of Proposed Rulemaking

One of the purposes of rulemaking is to address and resolve issues so that they are not the subject of litigation in particular licensing cases unless the final rule provides for that result.

With respect to the hydrogen control rule, the Commission stated in the Notice of Proposed Rulemaking, "The Commission concludes, based on available information, that the issues are sufficiently resolved to warrant interim approval of deliberate ignition systems for ice condenser plants." The rulemaking notice also made reference to the deliberate ignition systems installed at the Sequoyah and McGuire plants.

Regarding the *Catawba* operating license proceeding, the intervenors were placed on actual notice on at least two occasions of the hydrogen control rulemaking. On the first occasion—March 5, 1982—the Licensing Board, in ruling on pending petitions for intervention, declined to admit contentions because the issue they addressed was being considered in the hydrogen control rulemaking. The second occasion came on December 1, 1982 in a second Licensing Board ruling on contentions, where the Board stated that the hydrogen control rulemaking directly addressed the intervenors' hydrogen concerns.

I do not believe that issues which have been addressed in the hydrogen control rulemaking should be the subject of case-specific litigation.

Coverage of the Rule

Two specific technical concerns raised by Commissioner Asselstine were: (1) the rule fails to include pressurized water reactors (PWR's) with large dry containments, and (2) the rule failed to require that hydrogen control systems by automatically initiated. These were specifically addressed during the rulemaking process.

The scope of the rule was limited to include non-inerted boiling water reactors (BWR) III and ice condenser PWR designs and to specifically exclude inerted BWR I and BWR II designs and large containment PWR designs. Regarding inclusion of large dry PWR containment designs, the need for additional regulation is being deferred to the time of the severe accident rulemaking decision since hydrogen control is not considered to be an immediate safety concern.

Regarding the need for automation, the advantages and disadvantages of manual vs automatic actuation of the distributed igniter systems were evaluated as part of the rulemaking, and manual actuation was concluded to be acceptable.

Regulatory Analysis

The Commission has prepared a regulatory analysis for this regulation. The analysis examines the costs and benefits of the rule as considered by the Commission. A copy of the regulatory analysis is available for inspection and copying for a fee at the NRC Public Document Room, 1717 H Street, N.W., Washington, D.C. Single copies of the analysis may be obtained from Morton R. Fleishman, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 443–7616.

Paperwork Reduction Act

This final rule imposes information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501, *et seq.*) These requirements were approved by the Office of Management and Budget. Approval Number 3150–0011.

Regulatory Flexibility Act

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. This rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "Small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121. Since these companies are dominant in their service areas, this rule does not fall within the purview of the act.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by Reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, and Reporting and recordkeeping requirements.

50 FR 5567
Published 2/11/85

10 CFR Part 50

Hydrogen Control Requirements

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule; correction.

SUMMARY: In a Federal Register document published on January 25, 1985 (50 FR 3498), the U.S. Nuclear Regulatory Commission (NRC) amended its regulations to improve hydrogen control capability for boiling water reactors with MARK III containments and for pressurized water reactors with ice condenser containments. This notice contained a number of typographical errors which are corrected below.

FOR FURTHER INFORMATION CONTACT: Morton R. Fleishman, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone 301–443–7616.

SUPPLEMENTARY INFORMATION: Corrections are made to the following pages:

1. On page 3499, column two, line 15, "reduced" is corrected to read "reduce".
2. On page 3499, column two, paragraph two of footnote two, line one, "NUREG/CR2540" is corrected to read "NUREG/CR–2540".
3. On page 3499, column three, line 15, the sentence which reads "The Commission feels confident that there will be an appropriate margin of safety." is removed.
4. On page 3500, column one, second full paragraph which begins "It was suggested by some commenters . . .", line four after the first word "containments", add "and should not impose requirements for the remaining containments" before the word "since".
5. On page 3500, column one, last paragraph, line six, after the word "detonations", add "cannot occur in lieu of evaluating the effects of local detonations."
6. On page 3500, column two, second full paragraph which begins "Several commenters have . . .", line seven, "defering" is corrected to read "deferring" and in the same paragraph on line 18, "intergrated" is corrected to read "integrated".
7. On page 3500, column three, 11 lines from the bottom of the column, the word "safety" is corrected to read "safely".
8. On page 3502, column three, line nine of Commissioner Asselstine's Dissenting Views, the word "sustantive" is corrected to read "substantive".
9. On page 3502, column three, four lines from the bottom of the column, the word "Commission's" is corrected to read "Commission".
10. On page 3504, column one, 11 lines from the botton of the column, the word "seven" is corrected to read "severe".
11. On page 3504, column two, line six of the List of Subjects, add "and recordkeeping" after the word "Reporting" and before the word "requirements".

PART 50—[CORRECTED]

§ 50.44 [Corrected]

12. On page 3505, column two, line 13 of § 50.44(c)(3)(v)(A), the word "maintian" is corrected to read "maintain".
13. On page 3505, column two, line five of § 50.44(c)(3)(vi)(B)(*1*), the word "metalwater" is corrected to read "metal-water".
14. On page 3505, column three, line 11 of § 50.44(c)(3)(vi)(B)(*5*)(*i*), the word "Section" is corrected to read "section".
15. On page 3505, column three, lines two and three of § 50.44(c)(3)(vii)(B), the words "the effective date of this section" are replaced by "February 25, 1985".

Dated at Washington, DC, this 5th day of February 1985.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

≫50 FR 18852
Published 5/3/85
Effective 10/12/84

Elimination of Review of Financial Qualifications of Electric Utilities in Operating License Review and Hearings for Nuclear Power Plants; Correction

See Part 2 Statements of Consideration

≫50 FR 19323
Published 5/8/85
Effective 5/8/85

10 CFR Part 50

Emergency Planning and Preparedness

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: In response to a decision by the United States Court of Appeals for the District of Columbia Circuit, the Nuclear Regulatory Commission is revising its emergency planning and preparedness regulations for nuclear power reactors. The decision requires that the NRC remove the provision stating that emergency preparedness exercises are not required for any initial licensing decision.

EFFECTIVE DATE: May 8, 1985.

FOR FURTHER INFORMATION CONTACT: Theresa W. Hajost, Attorney, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555; Telephone: (202) 634–1493.

SUPPLEMENTARY INFORMATION: In *Union of Concerned Scientists* v. *NRC*, 735 F.2d 1437 (D.C. Cir. 1984), the U.S. Court of Appeals for the District of Columbia Circuit vacated the NRC's 1982 amendment (47 FR 30232, July 13, 1982) to its emergency planning and preparedness regulations, 10 CFR 50.47(a)(2) (1984), which stated that emergency preparedness exercises were part of the operational inspection process and thus were not required for any initial licensing hearing or decision.

The court held that "Congress did not grant the Commission discretion to remove so material an issue as the results of offsite emergency preparedness from reqauired section 189(a) hearings." 735 F. 2d at 1451. On January 7, 1985, the Supreme Court denied a petition for *certiorari* filed by several Utility-Intervenors in the case, and on January 30, 1985, the Court of Appeals formally vacated the 1982 amendment.

The basic effect of the court's decision and of the rule change which follows is that the results of pre-licensing emergency preparedness exercises may be subject to litigation before the Licensing Board. The revision does not change the general predictive nature of the Commission's findings on emergency planning and preparedness issues.

Because the D.C. Circuit held that the Commission did not have the statutory authority to promulgate the 1982 amendment, it is unnecessary to provide notice and an opportunity to comment on this revision, which should be viewed as an outgrowth of the 1982 rulemaking proceeding. For the same reason the Commission finds good cause for making the revision effective on publication in the **Federal Register**. The revision is an administrative change to conform the text of 10 CFR 50.47(a)(2) to the result in the case.

The court specifically focused on the last sentence added to 10 CFR 50.47(a)(2) by the 1982 Amendment. Thus, this sentence is being deleted from 10 CFR 50.47(a)(2).

Paperwork Reduction Act Statement

This revised rule contains no information collection reuirements and therefore is not subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 *et seq.*).

Environmental Impact: Categorical Exclusion

The NRC has determined that this revised regulation is the type of action described in categorical exclusion 10 CFR 51.22(c)(3). Therefore, neither an environmental impact statement nor an environmental assessment has been prepared for this revised regulation. Moreover, when promulgating the original emergency planning and preparedness regulations in 1980, the NRC prepared an "Environmental Assessment for Final Changes to 10 CFR Part 50 and Appendix E of 10 CFR Part 50, Emergency Planning Requirements for Nuclear Power Plants" (NUREG–0685, June 1980), and concluded that under the criteria of 10 CFR Part 51 an environmental impact statement was not required for the Commission's emergency planning and preparedness regulations, which included 10 CFR 50.47(a)(2) as hereby revised.

List of Subjects in 10 CFR Part 2

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and recordkeeping requirements.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of Title 5 of the United States Code, the NRC is adopting the following revisions to 10 CFR Part 50.

≫ 50 FR 29937
Published 7/23/85
Effective 7/23/85

10 CFR Part 50

Analysis of Potential Pressurized Thermal Shock Events

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations for light water nuclear power plants to: (1) Establish a screening criterion related to the fracture resistance of pressurized water reactor (PWR) vessels during pressurized thermal shock (PTS) events; (2) require analyses and schedule for implementation of flux reduction programs that are reasonably practicable to avoid exceeding the screening criterion; and (3) require detailed safety evaluations to be performed before plant operation beyond the screening criterion will be considered. These amendments are intended to produce an improvement in the safety of PWR vessels by identifying those corrective actions that may be required to prevent or mitigate potential PTS events.

EFFECTIVE DATE: July 23, 1985.

FOR FURTHER INFORMATION CONTACT: Roy Woods, Division of Safety Technology, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: 301–492–4714.

SUPPLEMENTARY INFORMATION:

Background

Transients and accidents can be postulated to occur in pressurized water reactors (PWRs) that result in severe overcooling (thermal shock) of the reactor vessel, concurrent with high pressure. In these pressurized thermal shock (PTS) events, rapid cooling of the reactor vessel internal surface causes a temperature distribution across the reactor vessel wall. This temperature distribution produces a thermal stress on the reactor vessel with a maximum tensile stress at the inside surface of the vessel. The magnitude of the thermal stress varies with the rate of change of temperature, and with time during the transient, and its effect is compounded by coincident pressure stresses.

Severe reactor system overcooling events with pressurization of the reactor vessel (PTS events) are postulated to result from a variety of causes. These include system transients, some of which are initiated by instrumentation and control system malfunctions (including stuck open valves in either the primary or secondary system), and postulated accidents such as small break loss-of-coolant accidents, main steam line breaks, and feedwater line breaks.

As long as the fracture resistance of the reactor vessel material is relatively high, these events are not expected to cause vessel failure. However, the fracture resistance of the reactor vessel material decreases with the integrated exposure to fast neutrons during the life of a nuclear power plant. The rate of decrease is dependent on the chemical composition of the vessel wall and weld materials. If the fracture resistance of the vessel has been reduced sufficiently by neutron irradiation, severe PTS events could cause small flaws that might exist near the inner surface to propagate into the vessel wall. The assumed initial flaw might be enlarged into a crack through the vessel wall of sufficient extent to threaten vessel integrity and, therefore, core cooling capability.

The toughness state of reactor vessel materials can be characterized by a "reference temperature for nil ductility transition" (RT_{NDT}). At normal operating temperatures, vessel materials are quite tough and resistant to crack propagation. As the temperature decreases, the metal gradually loses toughness over a temperature range of about 100 °F. RT_{NDT} is a measure of the temperature range at which this toughness transition occurs. Its value depends on the specific material in the vessel wall and the integrated neutron irradiation received by the vessel. These effects are determined by destructive tests of material specimens. Correlations, based on tests of irradiated specimens, have been developed to calculate the shift in RT_{NDT} as a function of neutron fluence for

various material compositions. The value of RT_{NDT} at a given time in a vessel's life is used in fracture mechanics calculations to determine whether assumed pre-existing flaws would propagate when the vessel is subjected to overcooling events.

The PTS issue is a concern only for PWRs. Boiling water reactors (BWRs) operate with a large portion of water inventory inside the pressure vessel at saturated conditions. Any sudden cooling will condense steam and result in a pressure decrease. Simultaneous conditions of high pressure and low temperature are considered to be improbable. Most BWRs also receive lower integrated fast neutron flux at the vessel inner wall, resulting in smaller RT_{NDT} shifts. BWRs are designed with a thinner-walled vessel, resulting in lower thermal stress intensities for postulated cracks.

On the basis of studies of severe overcooling events that have occurred, generic calculations of postulated PTS events that could occur, and vessel integrity calculations, the NRC staff has concluded that a value of RT_{NDT}[1] can be selected so that the risk from PTS events for reactor vessels with smaller RT_{NDT} values is acceptable. (The risk for vessels with higher values of RT_{NDT} might also be shown to be acceptable, but the demonstration would require detailed plant-specific evaluations and possibly modifications to existing equipment, systems, and procedures.) The staff recommended that a value for RT_{NDT} be established as a screening criterion that would determine the need for, and timing of, further plant-specific evaluations.

The staff's approach to selection of the RT_{NDT} screening criterion is described in detail in SECY–82–465.[2] In summary, the approach was to use a deterministic fracture mechanics algorithm to calculate the value of RT_{NDT} for which assumed pre-existing flaws in the reactor vessel would be predicted to initiate (grow deeper into the vessel wall) assuming occurrence of one of the severe overcooling events that have been experienced in U.S. PWRs. These "critical" values of RT_{NDT} were related to the expected frequency of the experienced severe overcooling events based on a limited data base, consisting of eight events in 350 reactor-years.

In addition, the staff considered a wide spectrum of postulated overcooling events that could occur. These events were grouped into categories, estimates were made of their expected frequency, and stylized characterizations of the temperature and pressure time-histories were developed for each event category. The estimates presented in detail in SECY–82–465 are based on a generic study of Westinghouse-designed PWR systems, and are considered also to be generally representative of PWR systems designed by Combustion Engineering. Because there are some significant differences between those designs and PWRs designed by Babcock & Wilcox that affect the characteristics and estimated frequencies of PTS events, information was also developed for the Babcock & Wilcox designs. This information is described in detail in Enclosure C to SECY–83–288 (July 15, 1983)[3]. It was concluded that the PTS risk for B&W plants is not significantly different from that of other PWRs. A probabilistic treatment of the fracture mechanics calculations was developed to gain insight into the sensitivity of the fracture mechanics calculations to uncertainties in the various input parameters. By combining the estimated frequencies of postulated events with the probabilistic fracture mechanics results, some estimates of the probability of vessel failure resulting from PTS events were developed. These estimates were used by the staff to better understand the residual risks inherent in the use of the screening criterion approach for further evalutions and resolution of the PTS issue.

On the basis of these studies, the NRC staff concluded the PWR reactor pressure vessels with conservatively calculated values of RT_{NDT} less than 270 °F for plate material and axial welds, and less than 300 °F for circumferential welds, present an acceptably low risk of vessel failure from PTS events.

Proposed Rule

On February 7, 1984, the Commission published a proposed rule in the **Federal Register** (49 FR 4498) that would: (1) Establish an RT_{NDT} screening criterion; (2) require licensees to submit present and projected values of RT_{NDT} (3) require early analysis and implementation of such fast neutron flux reduction programs as are reasonably practicable to avoid reaching the screening criterion; and (4) require plant-specific PTS safety analyses before a plant is within three calendar years of reaching the screening criterion, including analyses of alternatives to minimize the PTS problem. After consideration of the public comments received, the Commission has modified the proposed rule as discussed in the following section.

Comments on Proposed Rule

The Commission received twenty-two letters commenting on the proposed rule. Copies of those letters are available for public inspection and copying for a fee at the NRC Public Document Room at 1717 H Street, Washington, DC. Fourteen letters were from utilities (or from attorneys representing utilities), three from PWR Nuclear Steam Supply System manufacturers, one from an architect/engineering firm, and one from a group representing the nuclear industry. The remaining three letters were from members of the public, two of the three being from the same individual. There were a total of 181 individual comments, which are discussed by subject below.

Commission Approval To Exceed Screening Criterion

Comment: Eleven commenters agreed with the intended use of an RT_{NDT} screening criterion to determine if and when further safety analyses would be required, but expressed concern that by requiring Commission approval of these analyses before operation beyond the criterion, the proposed rule in fact established the RT_{NDT} values as operating limits. They recommended that the rule should be amended to allow continued operation unless the Commission specifically disapproves the required safety analyses.

Response: The Commission affirms that the purpose of the PTS screening criterion is to determine whether and when further plant-specific safety analyses are required. Its acceptability for that purpose is based on the Commission's judgment that the generic PTS studies already performed by the industry and the NRC staff provide reasonable assurance that operation of PWR pressure vessels with RT_{NDT} values below the screening criterion does not result in undue risk to the public health and safety because of the potential for PTS events. However, the existing generic studies do not in themselves provide this assurance for operation of individual pressure vessels with higher RT_{NDT} values, i.e., with lower fracture resistance. The Commission has concluded that detailed plant-specific analyses are required to provide this assurance. For those cases (expected to be relatively few) where licensees determine that the screening criterion will be exceeded before the end of the desired service life of the vessel, and who nevertheless wish to continue operation, the licensees clearly have a responsibility to provide the necessary basis for assuring the protection of the public health and safety prior to operation beyond the screening

[1] RT_{NDT} decreases with depth from the inside surface of an irradiated vessel's wall. This decrease is accounted for in vessel integrity analyses. As used in this document and in the screening criteria, RT_{NDT} is the peak value at the inside surface of the vessel.

[2] Copies of this document are available for public inspection and copying at the Public Document Room at 1717 H Street, NW, Washington, DC 20555.

[3] Copies of this document are available for public inspection and copying at the Public Document Room at 1717 H Street, NW, Washington, DC 20555.

criterion. The Commission's responsibility is to review the licensee's submittals and reach a decision on whether continued operation is acceptable. The Commission recognizes that a timely decision on its part is essential to avoid placing an unfair and unacceptable economic penalty on the licensee, but has concluded that the requirement for prior Commission approval in the proposed rule is appropriate and consistent with its statutory responsibilities.

Comment: Eight commenters also recommended that if the required safety analysis are not accepted by the Commission, then the proposed rule requirement that any further request must be based on "modifications to equipment, systems and operation of the facility in addition to those previously proposed . . .," should be changed so that re-analyses based upon better methods or new information would also be acceptable.

Response: The Commission agrees that further analyses based upon better methods or new information should be an allowable alternative if the original required safety analyses were not approved by the Commission. The final rule (§ 50.61(b)(6)) has been changed to reflect this alternative.

Reference Temperature Definition and Calculational Method

Comment: Nine of the commenters noted that since the proposed rule prescribes a specific conservative method for calculation of RT_{NDT} for use as a screening criterion, there is a potential inconsistency with the term RT_{NDT} as used elsewhere (e.g., in the ASME Code and in Appendix G to 10 CFR Part 50). The commenters recommended that RT_{NDT} be defined the same as in these other documents, or that the results of the prescribed calculation (for purposes of the PTS rule) be given a different designation.

Response: The final rule has been changed to define the reference temperature used for comparison with the screening criterion, and calculated as prescribed by § 50.61(b) of the rule as "reference temperature for pressurized thermal shock" (RT_{PTS})

Comment: The commenters also recommended that the values for copper and nickel content and fluence in Equations 1 and 2 of § 50.61(b) be described as "best estimate" values and that the "Margin" term to be added to Equations 1 and 2 be defined as covering uncertainties in those quantities as well as the uncertainties in initial RT_{NDT} value and in the calculational procedure for RT_{PTS}.

Response: This change has been made in the final rule.

Comment: One of the commenters requested that the definition of "Reactor Vessel Beltline" in the proposed rule be made the same as that given in Appendix G to 10 CFR Part 50.

Response: The Commission notes that the definition is the same as that given in the latest revision of Appendix G that was published in the **Federal Register** May 27, 1983 (48 FR 24008).

Use of Other Reference Temperature Correlations and Probabilistic Fracture Mechanics

Comment: Nine commenters responded that the rule should clearly state that alternative means of calculating RT_{NDT} (other than those specified in the rule) are acceptable for use in the analyses required by the rule to show acceptability of operation above the screening criterion values. One commenter requested that use of surveillance data be allowed in evaluating the reference temperature.

Seven commenters requested that it should also be made clear within the rule that the use of probabilistic fracture mechanics (PFM) techniques are acceptable in establishing PTS-related risk when performing these analyses. Five commenters also suggested that it should be acceptable to use other RT_{NDT} (now called RT_{PTS}) correlations to show that a plant is below the RT_{PTS} screening criterion and hence that no analyses are required.

Response: The Commission clearly intends that licensees be free to provide any information relevant in performing the rule-required analyses to justify continued operation of the plant. This includes other RT_{NDT} correlations, surveillance data, and PFM techniques. The wording of the rule in paragraph 50.61(b)(4) has been changed to reflect this intent.

However, the final rule does not permit use of other RT_{PTS} correlations or surveillance data in determining whether or not a reactor vessel exceeds the screening criterion. The screening criterion was selected taking many uncertainties into account, including the perceived conservatism of the prescribed method for calculating RT_{PTS}.

Reporting of Changes in Reference Temperature Projections

Comment: Three commenters responded that the requirement to report new projected values of Reference Temperature when significant changes occur is unnecessary. They believe that the reporting requirements of Appendix G to 10 CFR Part 50 are adequate. One commenter suggested requiring re-reporting only if the changes would indicate that the screening RT_{PTS} would be exceeded before the expiration of the operating license.

Response: The Commission must be informed early of any trends in RT_{PTS} changes, to allow adequate time for any necessary actions leading to implementation of corrective actions at any plant. Therefore, the Commission continues to believe that the reporting requirement as written in the proposed rule is necessary, and has not changed the reporting requirement in the final rule.

Alternatives to Flux Reduction

Comment: Sixteen commenters responded that, for those plants projected to exceed the screening criterion, the bias toward flux reduction as the "preferred" corrective action should be eliminated, and that other options should be allowed, including early analyses to justify actions other than flux reductions.

Response: The rule does not preclude options other than flux reduction measures. The implementation schedule for flux reduction options may include consideration of other options proposed by the licensee provided those other options are thoroughly justified by the licensee on a time schedule that will allow Commission review and acceptance before the efficacy of flux reduction is precluded by the passage of time.

Guidance of Plant-Specific Analysis

Comment: Thirteen commenters responded that the guidance and acceptance criteria for the analyses required by the rule should be provided with the rule, or the rule should be delayed until they can be provided.

Response: The Commission believes that the rule addresses an important safety issue and should be promulgated without delay. The development of the guidance and acceptance criteria involves performance by the staff and its contractors of analyses of the type to be required later from some licensees. The performance of the analyses requires several sequential steps which cannot be significantly shortened, and the insights to be gained from these analyses are necessary before the staff can draft its guidance. Therefore, the Commission believes that the best course of action is to promulgate the rule now and provide the guidance and acceptance criteria in late 1985 or early 1986. This will be at least a decade before any licensee will need to begin performing the analyses for submittal three years before exceeding the RT_{PTS} criteria, based on the Commission's current understanding of the flux levels at all PWRs. In order to avoid difficulty for any licensee where this expectation is not fulfilled, the Commission has changed the final rule to require licensees to submit the required analyses three years before the plant is projected to exceed the screening

criterion, or one year after issuance of the guidance and acceptance criteria, whichever is later.

If a licensee elects to perform analyses to justify alternatives to flux reduction prior to issuance of the final guidance and acceptance criteria, the staff will provide on request its best current judgement of what analyses are likely to be acceptable and what level of safety will be required.

Timing of Required Plant-Specific Analyses

The Commission invited public comments regarding whether the detailed analyses should be required five years prior to exceeding the screening criterion, instead of the three years in the proposed rule.

Comment: Eleven commenters responded with ten of the eleven stating that three years is preferable. The eleventh comment stated that a five year requirement would be useful to the extent that it would lead to earlier Commission reaction and a longer lead time for implementation, but also noted that "unless the NRC reaction is timely, the advantage will be lost."

Response: The Commission believes that three years allows adequate time for review and implementation of any necessary corrective actions. Therefore, the three year requirement has been retained in the final rule.

Necessity of PTS Rule

Comment: One commenter responded that the rule is not necessary and that its purpose could be accomplished with a generic letter or plant-specific action, since the lead plants have already been identified.

Response: The Commission evaluated alternatives to rulemaking prior to publication of the proposed rule. Plant-specific information is needed to determine whether or not corrective actions are needed, in sufficient time to allow implementation before PTS risk exceeds acceptable levels. The Commission believes a rule is the appropriate means to accomplish the above for all plants that may require action.

Adequacy of Bases for Proposed Rule

Comments were received from two individuals that expressed general concerns regarding the Commission's bases for the proposed rule. These individuals' various contentions are briefly noted below with the Commission's response.

Comments:

(1) Flux measurements and/or calculations are uncertain.

(2) Basis and assumptions of PTS rule are incorrect.

(3) There are other causes of embrittlement that are not considered by the PTS rule.

(4) Coupons used to monitor vessel steel embrittlement are not representative of the vessel material.

(5) PRA techniques are inadequate.

Response: When the NRC staff performed the studies upon which the PTS rule is based, it was recognized that there were many uncertainties involved in determination of risk due to PTS. The uncertainties were taken into account when the screening criterion was selected, allowing a conservative margin for safety and time for implementation of identified corrective actions before an acceptable level of safety is exceeded. The probabilistic risk analysis (PRA) and deterministic methods used and conclusions reached that risk is acceptable for vessels with RT_{PTS} below the screening criterion are discussed in SECY–82–465, SECY–83–288, and in the **Federal Register** Notice of Proposed Rulemaking (February 7, 1984).

Comment:

(6) The ability to detect cracks greater than ¼-inch in depth, and the "leak before break" principle, are relied upon in the resolution of Unresolved Safety Issue A–11, Reactor Vessel Materials Toughness.

Response: This comment is not relevant to the bases for the PTS rule since the existence of a non-detected, non-leaking crack was conservatively assumed in the PTS analyses.

Comment:

(7) The rule should apply to BWR's.

Response: The Commission does not believe that PTS is a significant safety concern for BWRs, and believes that the PTS rule should not be applied to BWRs. The several technical reasons for this (low probability of the event, lesser embrittlement due to shielding from larger amounts of water, and lower stress intensity due to a thinner vessel) are explained in the staff testimony given at the licensing board hearing for Limerick in response to contentions by the same commentor.

Comments:

(8) The bases for the PTS rule come mostly from operating reactor data.

(9) The screening criterion in the PTS rule is not based on observed precursors.

Response: As explained in SECY–82–465, the PTS rule is based both on a study of PTS precursors that have actually occurred, and on analytical studies of more severe events that have not actually occurred.

Comments:

(10) Generic analyses used without verification for specific plants.

(11) Link between Control System Interactions and Pressurized Thermal Shock not properly included.

Response: The PTS rule establishes a screening criterion, with a conservative margin to allow for uncertainties, below which the Commission has concluded that PTS risk is acceptable for any PWR. The rule also requires that plant-specific analyses be performed to identify any necessary corrective actions, well before the screening criterion is exceeded. Those required analyses will be plant-specific and will be required to include items such as control system interactions.

Comment:

(12) The Commission's analyses had to assume the existence of flaws.

Response: This is correct. If no flaw exists, then there is no PTS problem. Therefore, the Commission's analysis made the conservative assumption of the existence of a flaw, the depth of which was chosen, for each analysis, to maximize the likelihood of vessel failure.

Comment:

(13) B&W reactors are more susceptible to PTS-related failure.

Response: Based on staff analysis, reported in Enclosure C to SECY–83–288, the Commission concluded that the PTS risk for B&W plants is not significantly different from that for other PWRs.

Comment:

(14) Pump seal failures are not accounted for.

Response: Pump seal failure is one postulated cause of a small Loss of Coolant Accident (LOCA) and was accounted for in the analyses on which the PTS rule is based.

Comment:

(15) Missiles might penetrate containment during a PTS event.

Response: The analysis on which the PTS rule is based assume that vessel failure and core melt is a serious safety threat and must be avoided with or without containment failure. Those analyses did not quantify the probability of containment failure. However, the screening criterion was set at a value sufficiently low to account for the perceived small probability that a PTS event might fail containment. The Commission's long-term studies of PTS include analyzing the possibility of containment failure, and it is expected that the analyses required by the PTS rule will also require each licensee to perform such evaluations before the screening criteria specified are exceeded.

Comment:

(16) Fuel maneuvers to lower the fluence invite licensee cheating.

Response: The type of "maneuvers" performed to lower fluence to the critical welds are not the day-to-day maneuvers evidently envisioned by the commentor. These "maneuvers" involve

[4] Limerick Licensing Board, Order dated November 15, 1983, Memorandum and Order Granting Applicant's Motion for Summary Disposition of Contention I–62, Docket Nos. 50–352–OL and 50–353–OL.

selection of a particular pattern for arranging various types of fuel with various burnups in the core. This is done every year to 18 effective full power months when the core is reloaded, and is thoroughly verified by multiple checks. The flux reduction accomplished is also verified both experimentally and analytically, and will be reviewed by the Commission.

Comment:

(17) Fracture mechanics calculations do not have an experimental basis. The largest vessel ever tested was ⅛th-scale, and it "burst at ½rd the pressure calculated using fracture mechanics considerations."

Response: The experimental and analytical bases for the Commission's fracture mechanics methods are thoroughly documented (for example, in SECY–82–465) and are generally accepted in the engineering community as adequately conservative. A recent ⅛th-scale vessel test, the first such vessel subjected to pressure and thermal stress, failed at a stress very close to the predicted stress.[5]

Comments on Supplementary Information Section of Notice of Proposed Rulemaking

Several comments were received that relate to the Supplementary Information section of the February 7, 1983 **Federal Register** Notice. These comments are discussed below.

Number of Reactors Expected to Remain in Below RT_{PTS} Criterion

Comments: Several commenters took issue with the possible implication of a statement made that most PWRs will exceed the RT_{NDT} criterion.

Response: The Commission agrees that the implication is incorrect, and notes that it currently projects that the majority of plants are not expected to exceed the criterion before the expiration of the operating license.

Conservatism of Rule

Comment: Eight of the commenters responded to the statement by Commissioners Asselstine and Gilinsky in the Supplementary Information section that numerous conservative factors, unconservative factors, and unknown factors in the PTS analyses need to be considered appropriately in the acceptance criteria being developed by the staff, and that a suitable margin of safety should be retained throughout the service life of the facility. The commenters felt that in light of recent work by Oak Ridge National Laboratory, Electric Power Research Institute, etc., the staff has adequately considered all factors and the statement is unwarranted.

Response: The Commission believes that although considerable knowledge has been gained about PTS in the past two years, the previous statement by Commissioners Asselstine and Gilinsky remains valid.

Consideration of Possible License Extension

Comment: Several commenters viewed the statement in the Supplementary Information section regarding licensee consideration of the possibility of future license extension requests when evaluating flux reduction options, as premature, and recommended deletion.

Response: The rule does not explicitly require this consideration, but the Commission continues to believe that the potential for license extensions is a factor that licensees should consider.

Preferred Risk Reduction Actions

Comment: Several commenters recommended deletion of a statement in the Supplementary Information section that in the analysis of modifications in support of operation beyond the screening criterion, "[m]odifications to equipment or systems are preferable to reliance on procedure modifications."

Response: Since the statement could be interpreted as prejudging a regulatory decision, it has not been included in the Supplementary Information section of this rule.

Thermal Annealing Requirement in Appendix G to 10 CFR Part 50

Comment: Sixteen comments were received in response to the Commission's request for public comment on the merits of eliminating the thermal annealing requirements of 10 CFR Part 50, Appendix G (Fracture Toughness Requirements) paragraph IV.B., which states:

"Reactor vessels for which the predicted value of upper-shelf energy at end of life is below 50 ft-lb or for which the predicted value of adjusted reference temperature at end of life exceeds 200 °F (93 °C) must be designed to permit a thermal annealing treatment at a sufficiently high temperature to recover material toughness properties of ferritic materials of the reactor vessel beltline."

All of the commenters said this requirement was too restrictive and should be deleted. The most-cited reason was that annealing is only one of the possible actions and deletion would provide desirable flexibility to demonstrate acceptably low risk. None of the commenters said it was a hardship to design to permit annealing, although one wrote, "As a practical matter, it is impossible to design for a process that has not been technically developed." On the other hand, eight of the commenters urged that deletion ". . . should not in any way imply that a utility is prevented from using the thermal annealing process as an option to increase safety margin."

Response: The Commission accepts the comment that to require design for annealing if radiation damage is expected to be significant is too restrictive. The decision to anneal is largely an economic one, which should be left to the licensee. Paragraph IV.B was intended to alert applicants that annealing might someday need to be considered, to require that it be considered in the design phase if a significant level of radiation damage is expected, and to define that level. Yet, it appears that there have been few, if any, actual design features added to accommodate annealing. Other maintenance, inspection and repair operations place similar requirements on clearances and radiological hazards. Vessel expansion at the nozzles is not expected to exceed that experienced in operation at the design temperature (650 °F). The extra features on the surveillance program are referred to briefly in ASTM E 185, which is referenced in Appendix H to 10 CFR Part 50. Thus, it can be concluded that this paragraph has had little impact on the design of plants. Third, the 200 °F RT_{NDT}/50 ft-lb criteria have been misinterpreted in the past to mean that operation beyond those limits is unsafe, which is not true. For these reasons, the Commission is planning a separate rulemaking action to delete paragraph IV.B. of Appendix G, 10 CFR Part 50. The annealing alternative will remain in the regulation, as given in paragraph V.D. of Appendix G.

Fracture Mechanics Methodology To Be Used for Plant-Specific Analysis

Comment: One telephone comment was received regarding a perception that the Commission would encourage or require development and use of the newest fracture mechanics techniques for the required plant-specific PTS analyses.

Response: It is anticipated that the forthcoming staff guidance on the preparation of plant-specific PTS analyses will specify that the deterministic fracture mechanics techniques underlying the algorithms in the probabilistic fracture mechanics evaluations be conservative, standard methodologies that have been in use for some time. It is not the intent of the

[5] Heavy Section Steel Technology Program, Semiannual Program Report, NUREG/CR–3744 Vol. 1. C.E. Pugle. Copies are available for public inspection and copying at the Public Document Room at 1717 H. Street, Washington, D.C. 20555

Commission to require use of new methods that would "break new ground", such as those which account for elastic-plastic deformation.

Explanation of the Rule Requirements

Paragraph (b)(2) of § 50.61 establishes an RT_{PTS}—based screening criterion, and presents the conservative method chosen by the staff for the calculation of the RT_{PTS} for the purpose of comparison with the screening criterion. The basis for selection of this method is presented in Appendix E of Enclosure A to SECY 82-465. Since the acceptability of the screening criterion was based on generic studies, and since the purpose of the criterion is to provide a defined and consistent threshold for initiating the submittal of plant-specific analyses, the rule § 50.61(b)(1) requires each licensee to assess the current and projected values of RT_{PTS} using the methodology described in paragraph (b)(2) of the rule. Although the Commission expects that alternative methods of determining RT_{NDT} may be justified for use in plant-specific evaluations of PTS events in the future, the rule requires that the prescribed conservative method for calculating RT_{PTS} be used to determine when the plant-specific evaluations must be performed.

Applicants for operating licenses are required to provide projected values of RT_{PTS} as part of the final safety analysis report as provided in the amendment to paragraph (b) of § 50.34, "Contents of Applications: Technical Information."

On the basis of information currently available, it appears that the RT_{PTS} of most reactor vessels will remain below the screening criterion throughout the service life. For other reactor vessels, fuel management programs could be instituted that would result in core configurations reducing neutron flux at critical locations, thereby slowing the increase of RT_{PTS} so that the screening criterion would not be exceeded. The Commission recognizes that further refinements in materials information, analyses of PTS event frequencies and scenarios, and plant-specific analyses of alternative measures to reduce PTS risk may provide a basis for the acceptability of continued operation with RT_{PTS} values in excess of the screening criterion. The preparation and review of such analyses and determination of their acceptability will require substantial time. However, the effectiveness of flux reduction programs depends on early implementation. The Commission has determined that reasonably practicable flux reduction programs should be implemented promptly where needed to maintain reactor vessel RT_{PTS} below the screening criterion, without awaiting possible plant-specific determinations that higher values of RT_{PTS} are acceptable. Therefore, the rule § 50.61(b)(3) requires licensees with pressure vessels for which the reference temperature is projected to exceed the screening criterion before the expiration date of the operating license to submit an analysis of such flux reduction programs as are reasonably practicable to avoid exceeding the screening criterion, and a schedule for implementation of such programs. The NRC staff will review these submittals to confirm that reasonably practicable programs have been, or will be, implemented.

At the time of this submittal, or at a later time, licensees may submit additional plant-specific analyses to justify (by new information, improved analyses or evaluations of alternative measures) operation with less restrictive flux reduction programs in the future. The proposed schedule for implementation of any needed flux reduction program may reflect appropriately the possibility of such justification. However, it is the Commission's intent that the effectiveness of flux reduction programs that are needed to avoid, or to delay, reaching the screening criterion, and that are reasonably practicable, should not be reduced by delay in implementation, pending review of these analyses. The Commission expects that in evaluating the need for flux reduction programs, each licensee will consider the possibility that, in the future, the licensee may wish to seek approval of a license amendment to extend the expiration date of the license. Since consideration of protection against PTS events would be a factor in the Commission's decision on such a request, licensees should consider flux reduction programs that would prevent reaching the screening criterion by the end of the anticipated service life of the facility.

When a licensee determines, and the Commission agrees, that reasonably practicable flux reduction measures have been or will be implemented, and that the vessel RT_{PTS} is still projected to exceed the screening criterion before expiration of the operating license then the rule (§ 50.61(b)(4)) requires the submittal of a plant-specific safety analysis. The analysis must include an assessment of the vessel fracture mechanics properties for the remainder of vessel life, including effects on PTS risk of possible changes in fuel loading patterns affecting the neutron flux at the vessel wall. The analysis must also include a quantitative assessment of the PTS risk due to operation of the particular plant. It must identify potential event sequences that contribute significantly to PTS risk. It must consider both the expected frequency of these event sequences and the conditional probability of vessel failure and subsequent core melt, given the occurrence of these event sequences, and identify what, if any, modifications to equipment, systems and operation are necessary to prevent potential failure of the reactor vessel as a result of postulated PTS events, if continued operation beyond the screening criterion is allowed. Finally, the analysis must estimate the effects of recommended corrective actions on PTS risk and must justify, partly on the basis of risk analysis, operation at RT_{PTS} values above the screening criterion after completion of corrective or mitigative actions.

The plant-specific analysis must be submitted substantially in advance of the projected time at which the screening criterion would be exceeded, to allow time for Commission review of the analysis and licensee implementation of any proposed modifications well in advance of reaching the screening criterion. It is the Commission's intent that the staff perform a timely review of these analyses so that decisions, regarding any necessary corrective actions, are made with allowance for sufficient time to implement corrective actions before the screening criterion is exceeded.

Section 50.61(b)(5) of the rule provides for Commission review of these analyses. The Commission must approve the analysis before the plant may operate at RT_{PTS} values above the screening criterion.

The staff is developing additional guidance on the content of the required plant-specific analysis and on the acceptance criteria the staff will use in reviewing the analysis. The staff expects this guidance to be available long before any licensee will be required to start such an analysis (based on estimated rates of RT_{PTS} increase and recent information regarding the efficacy of flux reduction techniques planned at several plants with high RT_{PTS} values). The rule requires submittal of the plant-specific analysis at least three years before the screening criterion would be exceeded or one year after staff issuance of the guidance and acceptance criteria regarding those analyses, whichever is later. No plant-specific analysis performed in response to the requirement of § 50.61(b)(4) should be started before issuance of this

additional staff guidance. However, should a licensee decide to perform a plant-specific PTS safety analysis as part of its response to § 50.61(b)(3) in support of alternatives to, or implementation schedules for, flux reduction measures, the staff will meet, upon request, with the licensee to provide its best current guidance for such analysis.

Paragraph (b)(6) of § 50.61 provides that if the Commission concludes that the plant-specific analysis, including any plant modifications proposed, does not provide a basis for approval of operation at values of RT_{PTS} in excess of the PTS screening criterion for a given facility, then that facility may not be operated beyond the criterion unless the licensee requests and receives Commission approval based on additional modifications or new factors that would reduce the potential for failure of the reactor vessel due to PTS events.

Environmental Impact: Categorical Exclusion

The NRC has determined that this final rule is the type of action described in categorical exclusion 10 CFR 51.22(c)(3) (ii) and (iii). Therefore, neither an environmental impact statement nor an environmental assessment has been prepared for this final rule.

Regulatory Flexibility Act Certification

As required by the Regulatory Flexibility Act, 5 U.S.C. 605(b), the Commission certifies that this rule does not have a significant economic impact on a substantial number of small entities. This rule specifies minimum fracture toughness properties of irradiated pressure vessel materials to ameliorate the effects of PTS events on nuclear facilities licensed under the provisions of 10 CFR 50.21(b) and 10 CFR 50.22. The companies that own these facilities do not fall within the scope of the definition of "small entities" as set forth in the Regulatory Flexibility Act of the Small Business Size Standards in regulations issued by the Small Business Administration at 13 CFR Part 121.

Paperwork Reduction Act Statement

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget, approval number 3150-0011.

Regulatory Analysis

The Commission has prepared a regulatory analysis for this regulation. The analysis examines the costs and benefits of the rule as considered by the Commission. A copy of the regulatory analysis is available for inspection and copying for a fee at the NRC Public Document Room, 1717 H. Street, NW, Washington, DC 20555. Single copies of the analysis may be obtained from Mr. Karl Kniel, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone (301) 492-7359.

List of Subjects in 10 CFR Part 50

Antitrust, Classified information, Fire prevention, Incorporation by reference, Intergovernmental relations, Nuclear power plants and reactors, Penalty, Radiation protection, Reactor siting criteria, Reporting and record keeping requirements.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, and 5 U.S.C. 553, the NRC is adopting the following amendments to 10 CFR Part 50.

PART 51 ENVIRONMENTAL PROTECTION REGULATIONS FOR DOMESTIC LICENSING AND RELATED REGULATORY FUNCTIONS

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51.68 Environmental report—Rulemaking.
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51.75 Draft environmental impact statement—Construction permit.
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51.77 Distribution of draft environmental impact statement.

Draft Environmental Impact Statements—Materials Licenses

51.80 Draft environmental impact statement—Materials license.
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51.88 Proposals for legislation.

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51.99 [Reserved]

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51.108 [Reserved]

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51.116 Notice of intent.
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51.121 Status of NEPA actions.
51.122 List of interested organizations and groups.
51.123 Charges for environmental documents; distribution to public; distribution to governmental agencies.

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51.125 Responsible official.

Appendix A to Subpart A—Format for Presentation of Material in Environmental Impact Statements

Authority: Sec. 161, 68 Stat. 948, as amended (42 U.S.C. 2201); secs. 201, as amended, 202, 88 Stat. 1242, as amended, 1244 (42 U.S.C. 5841, 5842).

Subpart A also issued under National Environmental Policy Act of 1969, secs. 102, 104, 105, 83 Stat. 853–854, as amended (42 U.S.C. 4332, 4334, 4335); and Pub. L. 95-604, Title II, 92 Stat. 3033–3041. Section 51.22 also issued under sec. 274, 73 Stat. 688, as amended by 92 Stat. 3036–3038 (42 U.S.C. 2021).

49 FR 9352

§ 51.1 Scope.

This part contains environmental protection regulations applicable to NRC's domestic licensing and related regulatory functions. These regulations do not apply to export licensing matters within the scope of Part 110 of this chapter or to any environmental effects which NRC's domestic licensing and related regulatory functions may have upon the environment of foreign nations. Subject to these limitations, the regulations in this part implement:

(a) Section 102(2) of the National Environmental Policy Act of 1969, as amended.

(b) [Reserved].

§ 51.2 Subparts.

(a) The regulations in Subpart A of this part implement section 102(2) of the National Environmental Policy Act of 1969, as amended.

(b) [Reserved].

§ 51.3 Resolution of conflict.

In any conflict between a general rule in Subpart A of this part and a special rule in another subpart of this part or another part of this chapter applicable to a particular type of proceeding, the special rule governs.

§ 51.4 Definitions.

As used in this part:

"Act" means the Atomic Energy Act of 1954 (Pub. L. 83–703, 68 Stat. 919) including any amendments thereto.

"Commission" means the Nuclear Regulatory Commission or its authorized representatives.

"NRC" means the Nuclear Regulatory Commission, the agency established by Title II of the Energy Reorganization Act of 1974, as amended.

"NRC staff" means any NRC officer or employee or his/her authorized representative, except a Commissioner, a member of a Commissioner's immediate staff, an Atomic Safety and Licensing Board, an Atomic Safety and Licensing Appeal Board, a presiding officer, an administrative judge, an administrative law judge, or any other officer or employee of the Commission who performs adjudicatory functions.

"NRC staff director" means:

Executive Director for Operations;
Director, Office of Nuclear Reactor Regulation;
Director, Office of Nuclear Material Safety and Safeguards;
Director, Office of Nuclear Regulatory Research;
Director, Office of Inspection and Enforcement;
Director, Office of State Programs; or
Executive Legal Director; and
The designee of any NRC staff director.

51.4a [removed] 49 FR 24512

§ 51.5 Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

49 FR 9352

§ 51.6 Specific exemptions.

The Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and are otherwise in the public interest.

Subpart A—National Environmental Policy Act—Regulations Implementing Section 102(2)

§ 51.10 Purpose and scope of subpart; Application of regulations of Council on Environmental Quality.

(a) The National Environmental Policy Act of 1969, as amended (NEPA) directs that, to the fullest extent possible: (1) The policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in NEPA, and (2) all agencies of the Federal Government shall comply with the procedures in section 102(2) of NEPA except where compliance would be inconsistent with other statutory requirements. The regulations in this subpart implement section 102(2) of NEPA in a manner which is consistent with the NRC's domestic licensing and related regulatory authority under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and the Uranium Mill Tailings Radiation Control Act of 1978, and which reflects the Commission's announced policy to take account of the regulations of the Council on Environmental Quality published November 29, 1978 (43 FR 55978–56007) voluntarily, subject to certain conditions. This subpart does not apply to export licensing matters within the scope of Part 110 of this chapter nor does it apply to any environmental effects which NRC's domestic licensing and related regulatory functions may have upon the environment of foreign nations.

(b) The Commission recognizes a continuing obligation to conduct its domestic licensing and related regulatory functions in a manner which is both receptive to environmental concerns and consistent with the Commission's responsibility as an independent regulatory agency for protecting the radiological health and safety of the public. Accordingly, the Commission will:

(1) Examine any future interpretation or change to the Council's NEPA regulations;

(2) Follow the provisions of 40 CFR 1501.5 and 1501.6 relating to lead agencies and cooperating agencies, except that the Commission reserves the right to prepare an independent environmental impact statement

whenever the NRC has regulatory jurisdiction over an acitivity even though the NRC has not been designated as lead agency for preparation of the statement; and

(3) Reserve the right to make a final decision on any matter within the NRC's regulatory authority even though another agency has made a predecisional referral of an NRC action to the Council under the procedures of 40 CFR Part 1504.

(c) The regulations in this subpart [1] also address the limitations imposed on NRC's authority and responsibility under the National Environmental Policy Act of 1969, as amended, by the Federal Water Pollution Control Act Amendments of 1972, Pub. L. 92-500, 86 Stat. 816 et seq. (33 U.S.C. 1251 et seq.) In accordance with section 511(c)(2) of the Federal Water Pollution Control Act (86 Stat. 893, 33 U.S.C 1371(c)(2)) the NRC recognizes that responsibility for Federal regulation of nonradiological pollutant discharges [2] into receiving waters rests by statute with the Environmental Protection Agency.

(d) Commission actions initiating or relating to administrative or judicial civil or criminal enforcement actions or proceedings are not subject to section 102(2) of NEPA. These actions include issuance of notices, orders, and denials of requests for action pursuant to Subpart B of Part 2 of this chapter, and matters covered by Part 15 and 160 of this chapter.

49 FR 9352

§ 51.11 Relationship to other subparts.

[Reserved]

§ 51.12 Application of subpart to ongoing environmental work.

(a) Except as otherwise provided in this section, the regulations in this subpart shall apply to the fullest extent practicable to NRC's ongoing environmental work.

49 FR 24512

(b) No environmental report or any supplement to an environmental report filed with the NRC and no environmental assessment, environmental impact statement or finding of no significant impact or any supplement to any of the foregoing issued by the NRC before June 7, 1984, need be redone and no notice of intent to prepare an environmental impact statement or notice of availability of these environmental documents need be republished solely by reason of the promulgation on March 12, 1984, of this revision of Part 51.

49 FR 24512

§51.13 Emergencies.

Whenever emergency circumstances make it necessary and whenever, in other situations, the health and safety of the public may be adversely affected if mitigative or remedial actions are delayed, the Commission may take an action with significant environmental impact without observing the provisions of these regulations. In taking an action covered by this section, the Commission will consult with the Council as soon as feasible concerning appropriate alternative NEPA arrangements.

§ 51.14 Definitions.

(a) As used in this subpart:

"Categorical Exclusion" means a category of actions which do not individually or cumulatively have a significant effect on the human environment and which the Commission has found to have no such effect in accordance with procedures set out in § 51.22, and for which, therefore, neither an environmental assessment nor an environmental impact statement is required.

"Cooperating Agency" means any Federal agency other than the NRC which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. By agreement with the Commission, a State or local agency of similar qualifications or, when the effects are on a reservation, an Indian Tribe, may become a cooperating agency.

"Council" means the Council on Environmental Quality (CEQ) established by Title II of NEPA.

"DOE" means the U.S. Department of Energy or its duly authorized representatives.

"Environmental Assessment" means a concise public document for which the Commission is responsible that serves to:

(1) Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.

(2) Aid the Commission's compliance with NEPA when no environmental impact statement is necessary.

(3) Facilitate preparation of an environmental impact statement when one is necessary.

"Environmental document" includes an environmental assessment, an environmental impact statement, a finding of no significant impact, an environmental report and any supplements to or comments upon those documents, and a notice of intent.

"Environmental Impact Statement" means a detailed written statement as required by section 102(2)(C) of NEPA.

"Environmental report" means a document submitted to the Commission by an applicant for a permit, license, or other form of permission, or an amendment to or renewal of a permit, license or other form of permission, or by a petitioner for rulemaking, in order to aid the Commission in complying with section 102(2) of NEPA.

"Finding of No Significant Impact" means a concise public document for which the Commission is responsible that briefly states the reasons why an action, not otherwise excluded, will not have a significant effect on the human environment and for which therefore an environmental impact statement will not be prepared.

"NEPA" means the National Environmental Policy Act of 1969, as amended (Pub. L. 91-190, 83 Stat. 852, 856, as amended by Pub. L. 94-83, 89 Stat. 424, 42 U.S.C. 4321, et seq.).

"Notice of Intent" means a notice that an environmental impact statement will be prepared and considered.

(b) The definitions in 40 CFR 1508.3, 1508.7, 1508.8, 1508.14, 1508.15, 1508.16, 1508.17, 1508.18, 1508.20, 1508.23, 1508.25, 1508.26, and 1508.27, will also be used in implementing section 102(2) of NEPA.

49 FR 9352

§ 51.15 Time schedules.

Consistent with the purposes of NEPA, the Administrative Procedure Act, the Commission's rules of practice in Part 2 of this chapter, §§ 51.100 and 51.101, and with other essential considerations of national policy:

(a) The appropriate NRC staff director may, and upon the request of an applicant for a proposed action or a petitioner for rulemaking shall, establish a time schedule for all or any constituent part of the NRC staff NEPA process. To the maximum extent practicable, the NRC staff will conduct its NEPA review in accordance with any time schedule established under this section.

(b) Pursuant to Subpart G of Part 2 of this chapter, the presiding officer, the Atomic Safety and Licensing Appeal Board or the Commissioners acting as a collegial body may establish a time schedule for all or any part of an adjudicatory or rulemaking proceeding to the extent that each has jurisdiction.

§ 51.16 Proprietary information.

(a) Proprietary information, such as trade secrets or privileged or confidential commercial or financial information, will be treated in accordance with the procedures provided in § 2.790, "Public Inspections,

[1] See also Second Memorandum of Understanding Regarding Implementation of Certain NRC and EPA Responsibilities and Policy Statement on Implementation of Section 511 of the Federal Water Pollution Control Act (FWPCA) attached as Appendix A thereto, which were published in the Federal Register on December 31, 1975 (40 FR 60115) and became effective January 30, 1976.

[2] On June 1, 1976, the U.S. Supreme Court held that "'pollutants' subject to regulation under the FWPCA [Federal Water Pollution Control Act] do not include source, byproduct, and special nuclear materials. . . ." *Train* v. *Colorado PIRG*, 426 U.S. 1 at 25.

Exemptions. Requests for Withholding." of Part 2, "Rules of Practice," of this chapter.

(b) Any proprietary information which a person seeks to have withheld from public disclosure shall be submitted in accordance with § 2.790 of this chapter When submitted, the proprietary information should be clearly identified and accompanied by a request, containing detailed reasons and justifications, that the proprietary information be withheld from public disclosure. A non-proprietary summary describing the general content of the proprietary information should also be provided.

49 FR 9352

§ 51.17 Information collection requirements; OMB approval.

49 FR 24512

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act of 1980 (42 U.S.C. 3501 et seq.). OMB has approved the information collection requirements contained in this part under control number 3150–0021.

(b) The approved information collection requirements in this part appear in §§ 51.16, 51.41, 51.45, 51.50, 51.51, 51.52, 51.53, 51.54, 51.55, 51.60, 51.61, 51.62, 51.66, 51.68, and 51.69.

Preliminary Procedures

Classification of Licensing and Regulatory Actions

§ 51.20 Criteria for and identification of licensing and regulatory actions requiring environmental impact statements.

49 FR 9352

(a) Licensing and regulatory actions requiring an environmental impact statement shall meet at least one of the following criteria:

(1) The proposed action is a major Federal action significantly effecting the quality of the human environment.

(2) The proposed action involves a matter which the Commission, in the exercise of its discretion, has determined should be covered by an environmental impact statement.

(b) The following types of actions require an environmental impact statement or a supplement to an environmental impact statement:

(1) Issuance of a limited work authorization or a permit to construct a nuclear power reactor, testing facility or fuel reprocessing plant pursuant to Part 50 of this chapter.

(2) Issuance or renewal of a full power or design capacity license to operate a nuclear power reactor, testing facility, or fuel reprocessing plant pursuant to Part 50 of this chapter.

(3) Issuance of a permit to construct or a design capacity license to operate or renewal of a design capacity license to operate an isotopic enrichment plant pursuant to Part 50 of this chapter.

(4) Conversion of a provisional operating license for a nuclear power reactor, testing facility or fuel reprocessing plant to a full term or design capacity license pursuant to Part 50 of this chapter if a final environmental impact statement covering full term or design capacity operation has not been previously prepared.

(5) Issuance of a license amendment authorizing the decommissioning of a nuclear power reactor, testing facility, fuel reprocessing plant, or isotopic enrichment plant pursuant to Part 50 of this chapter.

(6) Issuance of a license to manufacture pursuant to Appendix M of Part 50 of this chapter.

(7) Issuance of a license to possess and use special nuclear material for processing and fuel fabrication, scrap recovery, or conversion of uranium hexafluoride pursuant to Part 70 of this chapter.

(8) Issuance of a license to possess and use source material for uranium milling or production of uranium hexafluoride pursuant to Part 40 of this chapter.

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(9) Issuance of a license pursuant to Part 72 of this chapter for the storage of spent fuel in an independent spent fuel storage installation (ISFSI) at a site not occupied by a nuclear power reactor.

(10) Issuance of a license amendment authorizing the decommissioning of an independent spent fuel storage installation (ISFSI) pursuant to Part 72 of this chapter.

(11) Issuance of renewal of a license authorizing receipt and disposal of radioactive waste from other persons pursuant to Part 61 of this chapter.

(12) Issuance of a license amendment pursuant to Part 61 of this chapter authorizing (i) closure of a land disposal site, (ii) transfer of the license to the disposal site owner for the purpose of institutional control, or (iii) termination of the license at the end of the institutional control period.

(13) Any other action which the Commission determines is a major Commission action significantly affecting the quality of the human environment. As provided in § 51.22(b), the Commission may, in special circumstances, prepare an environmental impact statement on an action covered by a categorical exclusion.

§ 51.21 Criteria for and identification of licensing and regulatory actions requiring environmental assessments.

All licensing and regulatory actions subject to this subpart require an environmental assessment except those identified in § 51.20(b) as requiring an environmental impact statement and those identified in § 51.22(c) as categorical exclusions. As provided in § 51.22(b), the Commission may, in special circumstances, prepare an environmental assessment on an action covered by a categorical exclusion.

§ 51.22 Criterion for and identification of licensing and regulatory actions eligible for categorical exclusion.

(a) Licensing and regulatory actions eligible for categorical exclusion shall meet the following criterion: The proposed action belongs to a category of actions which the Commission, by rule or regulation, has declared to be a categorical exclusion, after first finding that the category of actions does not individually or cumulatively have a significant effect on the human environment.

(b) Except in special circumstances, as determined by the Commission upon its own initiative or upon request of any interested person, an environmental assessment or an environmental impact statement is not required for any action within a category of actions included in the list of categorical exclusions set out in paragraph (c) of this section. Special circumstances include the circumstance where the proposed action involves unresolved conflicts concerning alternative uses of available resources within the meaning of section 102(2)(E) of NEPA.

49 FR 9352

(c) The following categories of actions are categorical exclusions:

(1) Amendments to Part 0, 1, 2, 4, 7, 8, 9, 10, 11, 14, 19, 21, 25, 55, 75, 95, 110, 140, 150, or 170 of this chapter, and actions on petitions for rulemaking relating to these amendments.

(2) Amendments to the regulations in this chapter which are corrective or of a minor or nonpolicy nature and do not substantially modify existing regulations, and actions on petitions for rulemaking relating to these amendments.

(3) Amendments to Parts 20, 30, 31, 32, 33, 34, 35, 40, 50, 51, 60, 61, 70, 71, 72, 73, 81, or 100 of this chapter which relate to (i) procedures for filing and reviewing applications for licenses or construction permits or other forms of permission or for amendments to or renewals of licenses or construction permits or other forms of permission; (ii) recordkeeping requirements; or (iii) reporting requirements; and actions on petitions for rulemaking relating to these amendments.

(4) Entrance into or amendment, suspension, or termination of all or part of an agreement with a State pursuant to section 274 of the Atomic Energy Act of

1954, as amended, providing for assumption by the State and discontinuance by the Commission of certain regulatory authority of the Commission.

(5) Procurement of general equipment and supplies.

(6) Procurement of technical assistance, confirmatory research provided that the confirmatory research does not involve any significant construction impacts, and personal services relating to the safe operation and protection of commercial reactors, other facilities, and materials subject to NRC licensing and regulation.

(7) Personnel actions.

(8) Issuance, amendment, or renewal of operators' licenses pursuant to Part 55 of this chapter.

(9) Issuance of an amendment to a permit or license for a reactor pursuant to Part 50 of this chapter which changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in Part 20 of this chapter, or which changes an inspection or a surveillance requirement, provided that (i) the amendment involves no significant hazards consideration, (ii) there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and (iii) there is no significant increase in individual or cumulative occupational radiation exposure. 49 FR 9352

(10) Issuance of an amendment to a permit or license pursuant to Parts 30, 31, 32, 33, 34, 35, 40, 50, 60, 61, 70, or 72 of this chapter which (i) changes surety, insurance and/or indemnity requirements, or (ii) changes recordkeeping, reporting, or administrative procedures or requirements.

(11) Issuance of amendments to licenses for fuel cycle plants and radioactive waste disposal sites and amendments to materials licenses identified in § 51.60(b)(1) which are administrative, organizational, or procedural in nature, or which result in a change in process operations or equipment, provided that (i) there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, (ii) there is no significant increase in individual or cumulative occupational radiation exposure, (iii) there is no significant construction impact, and (iv) there is no significant increase in the potential for or consequences from radiological accidents.

(12) Issuance of an amendment to a license pursuant to Parts 50, 60, 61, 70, 72, or 75 of this chapter relating solely to safeguards matters (i.e., protection against sabotage or loss or diversion of special nuclear material) or issuance of an approval of a safeguards plan

submitted pursuant to Parts 50, 70, 72, and 73 of this chapter, provided that the amendment or approval does not involve any significant construction impacts. These amendments and approvals are confined to (i) organizational and procedural matters, (ii) modifications to systems used for security and/or materials accountability, (iii) administrative changes, and (iv) review and approval of transportation routes pursuant to 10 CFR 73.37.

(13) Approval of package designs for packages to be used for the transportation of licensed materials.

(14) Issuance, amendment, or renewal of materials licenses issued pursuant to 10 CFR Parts 30, 31, 32, 33, 34, 35, 40, or 70 authorizing the following types of activities:

(i) Distribution of radioactive material and devices or products containing radioactive material to general licensees and to persons exempt from licensing.

(ii) Distribution of radiopharmaceuticals, generators, reagent kits and/or sealed sources to persons licensed pursuant to 10 CFR 35.14 and 35.100.

(iii) Nuclear pharmacies.

(iv) Medical and veterinary.

(v) Use of radioactive materials for research and development and for educational purposes.

(vi) Industrial radiography.

(vii) Irradiators.

(viii) Use of sealed sources and use of gauging devices, analytical instruments and other devices containing sealed sources.

(ix) Use of uranium as shielding material in containers or devices.

(x) Possession of radioactive material incident to performing services such as installation, maintenance, leak tests and calibration.

(xi) Use of sealed sources and/or radioactive tracers in well-logging procedures.

(xii) Acceptance of packaged radioactive wastes from others for transfer to licensed land burial facilities provided the interim storage period for any package does not exceed 180 days and the total possession limit for all packages held in interim storage at the same time does not exceed 50 curies.

(xiii) Manufacturing or processing of source, byproduct, or special nuclear materials for distribution to other licensees, except processing of source material for extraction of rare earth and other metals.

(xiv) Nuclear laundries.

(xv) Possession, manufacturing, processing, shipment, testing, or other use of depleted uranium military munitions.

(xvi) Any use of source, byproduct, or special nuclear material not listed above which involves quantities and forms of source, byproduct, or special nuclear material similar to those listed in paragraphs (c)(14) (i) through (xv) of this section (Category 14).

(15) Issuance, amendment or renewal of licenses for import of nuclear facilities and materials pursuant to Part 110 of this chapter, except for import of spent power reactor fuel.

(16) Issuance or amendment of guides for the implementation of regulations in this chapter, and issuance or amendment of other informational and procedural documents that do not impose any legal requirements.

(17) Issuance of an amendment to a permit or license pursuant to Parts 30, 40, 50, or 70 of this chapter which deletes any limiting condition of operation or monitoring requirement based on or applicable to any matter subject to the provisions of the Federal Water Pollution Control Act.

(18) Issuance of amendments or orders authorizing licensees of production or utilization facilities to resume operation, provided the basis for the authorization rests solely on a determination or redetermination by the Commission that applicable emergency planning requirements are met.

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§ 51.23 Temporary storage of spent fuel after cessation of reactor operation—Generic determination of no significant environmental impact.

(a) The Commission has made a generic determination that for at least 30 years beyond the expiration of reactor operating licenses no significant environmental impacts will result from the storage of spent fuel in reactor facility storage pools or independent spent fuel storage installations located at reactor or away-from-reactor sites. Further, the Commission believes there is reasonable assurance that one or more mined geologic repositories for commercial high-level radioactive waste and spent fuel will be available by the year 2007–2009, and that sufficient repository capacity will be available within 30 years beyond expiration of any reactor operating license to dispose of commercial high-level radioactive waste and spent fuel originating in such reactor and generated up to that time.

(b) Accordingly, as provided in §§ 51.30(b), 51.53, 51.61, 51.80(b), 51.95 and 51.97(a), and within the scope of the generic determination in paragraph (a) of this section, no discussion of any environmental impact of spent fuel storage in reactor facility storage pools or independent spent fuel storage installations (ISFSI) for the period following the term of the reactor operating license or amendment or initial ISFSI license or amendment for which application is made, is required in any environmental report, environmental impact statement, environmental assessment or other analysis prepared in connection with the issuance or amendment of an operating license for a nuclear reactor or in connection with the issuance of an initial license for storage of spent fuel at an ISFSI, or any amendment thereto.

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(c) This section does not alter any requirements to consider the environmental impacts of spent fuel storage during the term of a reactor operating license or a license for an ISFSI in a licensing proceeding.

Determinations To Prepare Environmental Impact Statements, Environmental Assessments or Findings of No Significant Impact, and Related Procedures

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§ 51.25 Determination to prepare environmental impact statement or environmental assessment; eligibility for categorical exclusion.

Before taking a proposed action subject to the provisions of this subpart, the appropriate NRC staff director will determine on the basis of the criteria and classifications of types of actions in §§ 51.20, 51.21 and 51.22 of this subpart whether the proposed action is of the type listed in § 51.22(c) as a categorical exclusion or whether an environmental impact statement or an environmental assessment should be prepared. An environmental assessment is not necessary if it is determined that an environmental impact statement will be prepared.

§ 51.26 Requirement to publish notice of intent and conduct scoping process.

(a) Whenever the appropriate NRC staff director determines that an environmental impact statement will be prepared in connection with a proposed action, a notice of intent will be prepared as provided in § 51.27, and will be published in the **Federal Register** as provided in § 51.116, and an appropriate scoping process (see §§ 51.27, 51.28 and 51.29) will be conducted.

(b) The scoping process may include a public scoping meeting.

§ 51.27 Notice of intent.

(a) The notice of intent required by § 51.26 shall:

(1) State that an environmental impact statement will be prepared;

(2) Describe the proposed action and, to the extent sufficient information is available, possible alternatives;

(3) State whether the applicant or petitioner for rulemaking has filed an environmental report, and, if so, where copies are available for public inspection;

(4) Describe the proposed scoping process, including the role of participants, whether written comments

will be accepted, the last date for submitting comments and where comments should be sent, whether a public scoping meeting will be held, the time and place of any scoping meeting or when the time and place of the meeting will be announced; and

(5) State the name, address and telephone number of an individual in NRC who can provide information about the proposed action, the scoping process, and the environmental impact statement.

Scoping

§ 51.28 Scoping—Participants.

(a) The appropriate NRC staff director shall invite the following persons to participate in the scoping process:

(1) The applicant or the petitioner for rulemaking;

(2) Any person who has petitioned for leave to intervene in the proceeding or who has been admitted as a party to the proceeding;

(3) Any other Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved or which is authorized to develop and enforce relevant environmental standards;

(4) Affected State and local agencies, including those authorized to develop and enforce relevant environmental standards;

(5) Any affected Indian tribe; and

(6) Any person who has requested an opportunity to participate in the scoping process.

(b) The appropriate NRC staff director may also invite any other appropriate person to participate in the scoping process.

(c) Participation in the scoping process for an environmental impact statement does not entitle the participant to become a party to the proceeding to which the environmental impact statement relates. Participation in an adjudicatory proceeding is governed by the procedures in 10 CFR 2.714 and 2.715. Participation in a rulemaking proceeding in which the Commission has decided to have a hearing is governed by the provisions in the notice of hearing.

§ 51.29 Scoping—Environmental impact statement.

(a) The scoping process for an environmental impact statement shall begin as soon as practicable after publication of the notice of intent as provided in § 51.116, and shall be used to:

(1) Define the proposed action which is to be the subject of the statement. The provisions of 40 CFR 1502.4 will be used for this purpose.

(2) Determine the scope of the statement and identify the significant issues to be analyzed in depth.

(3) Identify and eliminate from detailed study issues which are peripheral or are not significant or which have been covered by prior environmental review. Discussion of these issues in the statement will be limited to a brief presentation of why they are peripheral or will not have a significant effect on the quality of the human environment or a reference to their coverage elsewhere.

(4) Identify any environmental assessments and other environmental impact statements which are being or will be prepared that are related to but are not part of the scope of the statement under consideration.

(5) Identify other environmental review and consultation requirements related to the proposed action so that other required analyses and studies may be prepared concurrently and integrated with the environmental impact statement.

(6) Indicate the relationship between the timing of the preparation of environmental analyses and the Commission's tentative planning and decision-making schedule.

(7) Identify any cooperating agencies, and as appropriate, allocate assignments for preparation and schedules for completion of the statement to the NRC and any cooperating agencies.

(8) Describe the means by which the environmental impact statement will be prepared, including any contractor assistance to be used.

(b) At the conclusion of the scoping process, the appropriate NRC staff director will prepare a concise summary of the determinations and conclusions reached, including the significant issues identified, and will send a copy of the summary to each participant in the scoping process.

(c) At any time prior to issuance of the draft environmental impact statement, the appropriate NRC staff director may revise the determinations made under paragraph (b) of this section, as appropriate, if substantial changes are made in the proposed action, or if significant new circumstances or information arise which bear on the proposed action or its impacts.

Environmental Assessment

§ 51.30 Environmental assessment.

(a) An environmental assessment shall identify the proposed action and include:

(1) A brief discussion of:

(i) The need for the proposed action;

(ii) Alternatives as required by section 102(2)(E) of NEPA;

(iii) The environmental impacts of the proposed action and alternatives as appropriate; and

(2) A list of agencies and persons consulted, and identification of sources used.

(b) Unless otherwise determined by the Commission, an environmental assessment will not include discussion of any aspect of the storage of spent fuel within the scope of the generic determination in § 51.23(a) and in accordance with the provisions of § 51.23(b).

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§ 51.31 Determinations based on environmental assessment.

Upon completion of an environmental assessment, the appropriate NRC staff director will determine whether to prepare an environmental impact statement or a finding of no significant impact on the proposed action. As provided in § 51.33, a determination to prepare a draft finding of no significant impact may be made.

Finding of No Significant Impact

§ 51.32 Finding of no significant impact.

(a) A finding of no significant impact will:

(1) Identify the proposed action;

(2) State that the Commission has determined not to prepare an environmental impact statement for the proposed action;

(3) Briefly present the reasons why the proposed action will not have a significant effect on the quality of the human environment;

(4) Include the environmental assessment or a summary of the environmental assessment. If the assessment is included, the finding need not repeat any of the discussion in the assessment but may incorporate it by reference;

(5) Note any other related environmental documents; and

(6) State that the finding and any related environmental documents are available for public inspection and where the documents may be inspected.

§ 51.33 Draft finding of no significant impact; distribution.

(a) As provided in paragraph (b) of this section, the appropriate NRC staff director may make a determination to prepare and issue a draft finding of no significant impact for public review and comment before making a final determination whether to prepare an environmental impact statement or a final finding of no significant impact on the proposed action.

(b) Circumstances in which a draft finding of no significant impact may be prepared will ordinarily include the following:

(1) A finding of no significant impact appears warranted for the proposed action but the proposed action is (i)

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closely similar to one which normally requires the preparation of an environmental impact statement, or (ii) without precedent; and

(2) The appropriate NRC staff director determines that preparation of a draft finding of no significant impact will further the purposes of NEPA.

(c) A draft finding of no significant

impact will (1) be marked "Draft", (2) contain the information specified in § 51.32, (3) be accompanied by or include a request for comments on the proposed action and on the draft finding within thirty (30) days, or such longer period as may be specified in the notice of the draft finding, and (4) be published in the **Federal Register** as required by §§ 51.35 and 51.119.

(d) A draft finding will be distributed as provided in § 51.74(a). Additional copies will be made available in accordance with § 51.123.

(e) When a draft finding of no significant impact is issued for a proposed action, a final determination to prepare an environmental impact statement or a final finding of no significant impact for that action shall not be made until the last day of the public comment period has expired.

§ 51.34 Preparation of finding of no significant impact.

(a) Except as provided in paragraph (b) of this section, the finding of no significant impact will be prepared by the NRC staff director authorized to take the action.

(b) When a hearing is held on the proposed action under the regulations in Subpart G of Part 2 of this chapter or when the action can only be taken by the Commissioners acting as a collegial body, the appropriate NRC staff director will prepare a proposed finding of no significant impact which may be subject to modification as a result of review and decision as appropriate to the nature and scope of the proceeding. In such cases, the presiding officer, the Atomic Safety and Licensing Appeal Board, or the Commission acting as a collegial body, as appropriate, will issue the final finding of no significant impact.

§ 51.35 Requirement to publish finding of no significant impact; limitation on Commission action.

(a) Whenever the Commission makes a draft or final finding of no significant impact on a proposed action, the finding will be published in the **Federal Register** as provided in § 51.119.

(b) Except as provided in § 51.13, the Commission shall not take the proposed action until after the final finding has been published in the **Federal Register**.

Environmental Reports and Information—Requirements Applicable to Applicants and Petitioners for Rulemaking

General

§ 51.40 Consultation with NRC Staff.

(a) A prospective applicant or petitioner for rulemaking is encouraged to confer with NRC staff as early as possible in its planning process before submitting environmental information or filing an environmental report.

(b) Requests for guidance or information on environmental matters may include inquiries relating to:

(1) Applicable NRC rules and regulations;

(2) Format, content and procedures for filing environmental reports and other environmental information, including the type and quantity of environmental information likely to be needed to address issues and concerns identified in the scoping process described in § 51.29 in a manner appropriate to their relative significance;

(3) Availability of relevant environmental studies and environmental information;

(4) Need for, appropriate level and scope of any environmental studies or information which the Commission may require to be submitted in connection with an application or petition for rulemaking.

(5) Public meetings with NRC staff.

(c) Questions concerning environmental matters should be addressed to the following NRC staff offices as appropriate:

Utilization facilities: Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: (301) 492–7691.

Production facilities: Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: (301) 427–4063.

Materials licenses: Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: (301) 427–4063.

Rulemaking: Director, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: (301) 427–4341.

General Environmental Matters: Executive Director for Operations, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: (301) 492–7511.

§ 51.41 Requirement to submit environmental information.

The Commission may require an applicant for a permit, license, or other form of permission, or amendment to or renewal of a permit, license or other form of permission, or a petitioner for rulemaking to submit such information to the Commission as may be useful in aiding the Commission in complying with section 102(2) of NEPA. The Commission will independently evaluate and be responsible for the reliability of any information which it uses.

Environmental Reports—General Requirements

§ 51.45 Environmental Report.

(a) *General.* As required by §§ 51.50, 51.53, 51.54, 51.60, 51.61, 51.62 or 51.68, as appropriate, each applicant or petitioner for rulemaking shall submit with its application or petition for rulemaking one signed original of a separate document entitled "Applicant's" or "Petitioner's Environmental Report," as appropriate, and the number of copies specified in §§ 51.55, 51.66 or 51.69. An applicant or petitioner for rulemaking may submit a supplement to an environmental report at any time.

(b) *Environmental considerations.* The environmental report shall contain a description of the proposed action, a statement of its purposes, a description of the environment affected, and discuss the following considerations:

(1) The impact of the proposed action on the environment. Impacts shall be discussed in proportion to their significance;

(2) Any adverse environmental effects which cannot be avoided should the proposal be implemented;

(3) Alternatives to the proposed action. The discussion of alternatives shall be sufficiently complete to aid the Commission in developing and exploring, pursuant to section 102(2)(E) of NEPA, "appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." To the extent practicable, the environmental impacts of the proposal and the alternatives should be presented in comparative form;

(4) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and

(5) Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

(c) *Analysis.* The environmental report shall include an analysis which considers and balances the environmental effects of the proposed action and the alternatives available for reducing or avoiding adverse environmental effects, as well as the environmental, economic, technical and other benefits of the proposed action. The analysis shall, to the fullest extent practicable, quantify the various factors considered. To the extent that there are important qualitative considerations or factors that cannot be quantified, those considerations or factors shall be discussed in qualitative terms. The environmental report should contain sufficient data to aid the Commission in its development of an independent analysis.

(d) *Status of compliance.* The environmental report shall list all Federal permits, licenses, approvals and

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other entitlements which must be obtained in connection with the proposed action and shall describe the status of compliance with these requirements. The environmental report shall also include a discussion of the status of compliance with applicable environmental quality standards and requirements including, but not limited to, applicable zoning and land-use regulations, and thermal and other water pollution limitations or requirements which have been imposed by Federal, State, regional, and local agencies having responsibility for environmental protection. The discussion of alternatives in the report shall include a discussion of whether the alternatives will comply with such applicable environmental quality standards and requirements.

(e) *Adverse information.* The information submitted pursuant to paragraphs (b)–(d) of this section should not be confined to information supporting the proposed action but should also include adverse information.

Environmental Reports—Production and Utilization Facilities

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§ 51.50 Environmental Report—Construction permit stage.

Each applicant for a permit to construct a production or utilization facility covered by § 51.20 shall submit with its application the number of copies, as specified in § 51.55, of a separate document, entitled "Applicant's Environmental Report—Construction Permit Stage," which shall contain the information specified in §§ 51.45, 51.51 and 51.52. Each environmental report shall identify procedures for reporting and keeping records of environmental data, and any conditions and monitoring requirements for protecting the non-aquatic environment, proposed for possible inclusion in the license as environmental conditions in accordance with § 50.36b of this chapter.

§ 51.51 Uranium Fuel Cycle Environmental Data—Table S-3.

(a) Every environmental report prepared for the construction permit stage of a light-water-cooled nuclear power reactor, and submitted on or after September 4, 1979, shall take Table S-3, Table of Uranium Fuel Cycle Environmental Data, as the basis for evaluating the contribution of the environmental effects of uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, reprocessing of irradiated fuel, transportation of radioactive materials and management of low level wastes and high level wastes related to uranium fuel cycle activities to the environmental costs of licensing the nuclear power reactor. Table S-3 shall be included in the environmental report and may be supplemented by a discussion of the environmental significance of the data set forth in the table as weighed in the analysis for the proposed facility.

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(b) TABLE S-3

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TABLE S-3—TABLE OF URANIUM FUEL CYCLE ENVIRONMENTAL DATA [1]

[Normalized to model LWR annual fuel requirement (WASH-1248) or reference reactor year (NUREG-0116)]

[See footnotes at end of this table]

Environmental considerations	Total	Maximum effect per annual fuel requirement or reference reactor year of model 1,000 MWe LWR
NATURAL RESOURCE USE		
Land (acres)		
Temporarily committed [2]	100	
Undisturbed area	79	
Disturbed area	22	Equivalent to a 110 MWe coal-fired power plant
Permanently committed	13	
Overburden moved (millions of MT)	2.8	Equivalent to 95 MWe coal-fired power plant
Water (millions of gallons)		
Discharged to air	180	≈2 percent of model 1,000 MWe LWR with cooling tower.
Discharged to water bodies	11,090	
Discharged to ground	127	
Total	11,377	<4 percent of model 1,000 MWe LWR with once-through cooling.
Fossil fuel		
Electrical energy (thousands of MW-hour)	323	<5 percent of model 1,000 MWe LWR output
Equivalent coal (thousands of MT)	118	Equivalent to the consumption of a 45 MWe coal-fired power plant.
Natural gas (millions of scf)	135	<0.4 percent of model 1,000 MWe energy output
EFFLUENTS—CHEMICAL (MT)		
Gases (including entrainment): [3]		
SO_x [4]	4,400	
NO_x [5]	1,190	Equivalent to emissions from 45 MWe coal-fired plant for a year.
Hydrocarbons	14	
CO	29.6	
Particulates	1,154	
Other gases:		
F	.67	Principally from UF_6 production, enrichment, and reprocessing. Concentration within range of state standards—below level that has effects on human health.
HCl	.014	

[Table S-3 continued on next page]

TABLE S-3—TABLE OF URANIUM FUEL CYCLE ENVIRONMENTAL DATA [1]—Continued

[Normalized to model LWR annual fuel requirement (WASH-1248) or reference reactor year (NUREG-0116)]

[See footnotes at end of this table]

Environmental considerations	Total	Maximum effect per annual fuel requirement or reference reactor year of model 1,000 MWe LWR
Liquids		
SO_x	9.9	From enrichment, fuel fabrication, and reprocessing steps. Components that constitute a potential for adverse environmental effect are present in dilute concentrations and receive additional dilution by receiving bodies of water to levels below permissible standards. The constituents that require dilution and the flow of dilution water are: NH_3—600 cfs., NO_x—30 cfs., Fluoride—70 cfs.
NO_x	25.6	
Fluoride	12.9	
Ca^{++}	5.4	
Cl^-	8.5	
Na^+	12.1	
NH_3	10.0	
Fe	4	
Tailings solutions (thousands of MT)	240	From mills only—no significant effluents to environment.
Solids	91,000	Principally from mills—no significant effluents to environment.
Effluents—Radiological (curies)		
Gases (including entrainment):		
Rn-222		Presently under reconsideration by the Commission.
Ra-226	.02	
Th-230	.02	
Uranium	.034	
Tritium (thousands)	18.1	
C-14	24	
Kr-85 (thousands)	400	
Ru-106	.14	Principally from fuel reprocessing plants.
I-129	1.3	
I-131	.83	
Tc-99		Presently under consideration by the Commission.
Fission products and transuranics	.203	
Liquids:		
Uranium and daughters	2.1	Principally from milling—included tailings liquor and returned to ground—no effluents; therefore, no effect on environment.
Ra-226	.0034	From UF_6 production.
Th-230	.0015	
Th-234	.01	From fuel fabrication plants—concentration 10 percent of 10 CFR 20 for total processing 26 annual fuel requirements for model LWR.
Fission and activation products	5.9×10^{-6} [2]	
Solids (buried on site):		
Other than high level (shallow)	11,300	9,100 Ci comes from low level reactor wastes and 1,500 Ci comes from reactor decontamination and decommissioning—buried at land burial facilities. 600 Ci comes from mills—included in tailings returned to ground. Approximately 60 Ci comes from conversion and spent fuel storage. No significant effluent to the environment.
TRU and HLW (deep)	[3] 1.1 × 10	Buried at Federal Repository.
Effluents—thermal (billions of British thermal units)	4,083	<5 percent of model 1,000 MWe LWR.
Transportation (person-rem):		
Exposure of workers and general public	2.5	
Occupational exposure (person-rem)	22.6	From reprocessing and waste management.

[1] In some cases where no entry appears it is clear from the background documents that the matter was addressed and that, in effect, the Table should be read as if a specific zero entry had been made. However, there are other areas that are not addressed at all in the Table. Table S-3 does not include health effects from the effluents described in the Table or estimates of releases of Radon-222 from the uranium fuel cycle or estimates of Technetium-99 released from waste management or reprocessing activities. These issues may be the subject of litigation in the individual licensing proceedings.

Data supporting this table are given in the "Environmental Survey of the Uranium Fuel Cycle," WASH-1248, April 1974; the "Environmental Survey of the Reprocessing and Waste Management Portion of the LWR Fuel Cycle," NUREG-0116 (Supp. 1 to WASH-1248); the "Public Comments and Task Force Responses Regarding the Environmental Survey of the Reprocessing and Waste Management Portions of the LWR Fuel Cycle," NUREG-0216 (Supp. 2 to WASH-1248); and in the record of the final rulemaking pertaining to Uranium Fuel Cycle Impacts from Spent Fuel Reprocessing and Radioactive Waste Management, Docket RM-50-3. The contributions from reprocessing, waste management and transportation of wastes are maximized for either of the two fuel cycles (uranium only and no recycle). The contribution from transportation excludes transportation of cold fuel to a reactor and of irradiated fuel and radioactive wastes from a reactor which are considered in Table S-4 of § 51.20(g). The contributions from the other steps of the fuel cycle are given in columns A-E of Table S-3A of WASH-1248.

[2] The contributions to temporarily committed land from reprocessing are not prorated over 30 years, since the complete temporary impact accrues regardless of whether the plant services one reactor for one year or 57 reactors for 30 years.

[3] Estimated effluents based upon combustion of equivalent coal for power generation.

[4] 1.2 percent from natural gas use and process.

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§ 51.52 Environmental effects of transportation of fuel and waste—Table S-4.

Every environmental report prepared for the construction permit stage of a light-water-cooled nuclear power reactor, and submitted after February 4, 1975, shall contain a statement concerning transportation of fuel and radioactive wastes to and from the reactor. That statement shall indicate that the reactor and this transportation either meet all of the conditions in paragraph (a) of this section or all of the conditions in paragraph (b) of this section.

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(a)(1) The reactor has a core thermal power level not exceeding 3,800 megawatts;

(2) The reactor fuel is in the form of sintered uranium dioxide pellets having a uranium-235 enrichment not exceeding 4% by weight, and the pellets are encapsulated in zircaloy rods;

(3) The average level of irradiation of the irradiated fuel from the reactor does not exceed 33,000 megawatt-days per metric ton, and no irradiated fuel assembly is shipped until at least 90 days after it is discharged from the reactor;

(4) With the exception of irradiated fuel, all radioactive waste shipped from the reactor is packaged and in a solid form:

(5) Unirradiated fuel is shipped to the reactor by truck; irradiated fuel is shipped from the reactor by truck, rail, or barge; and radioactive waste other than irradiated fuel is shipped from the reactor by truck or rail; and

(6) The environmental impacts of transportation of fuel and waste to and from the reactor, with respect to normal conditions of transport and possible accidents in transport, are as set forth in Summary Table S-4 in paragraph (c) of this section; and the values in the table represent the contribution of the transportation to the environmental costs of licensing the reactor.

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(b) For reactors not meeting the conditions of paragraph (a) of this section, the statement shall contain a full description and detailed analysis of the environmental effects of transportation of fuel and wastes to and from the reactor, including values for the environmental impact under normal conditions of transport and for the environmental risk from accidents in transport. The statement shall indicate that the values determined by the analysis represent the contribution of such effects to the environmental costs of licensing the reactor.

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(c) SUMMARY TABLE S-4

SUMMARY TABLE S-4—ENVIRONMENTAL IMPACT OF TRANSPORTATION OF FUEL AND WASTE TO AND FROM ONE LIGHT-WATER-COOLED NUCLEAR POWER REACTOR [1]

Normal Conditions of Transport

	Environmental impact
Heat (per irradiated fuel cask in transit)	250,000 Btu/hr.
Weight (governed by Federal or State restrictions)	73,000 lbs. per truck; 100 tons per cask per rail car.
Traffic density:	
Truck	Less than 1 per day.
Rail	Less than 3 per month

Exposed population	Estimated number of persons exposed	Range of doses to exposed individuals [2] (per reactor year)	Cumulative dose to exposed population (per reactor year) [3]
Transportation workers	200	0.01 to 300 millirem	4 man-rem.
General public:			
Onlookers	1,100	0.003 to 1.3 millirem	3 man-rem.
Along Route	600,000	0.0001 to 0.06 millirem	

Accidents in Transport

	Environmental risk
Radiological effects	Small [4]
Common (nonradiological) causes	1 fatal injury in 100 reactor years; 1 nonfatal injury in 10 reactor years; $475 property damage per reactor year.

[1] Data supporting this table are given in the Commission's "Environmental Survey of Transportation of Radioactive Materials to and from Nuclear Power Plants," WASH-1238, December 1972, and Supp. 1 NUREG-75/038 April 1975. Both documents are available for inspection and copying at the Commission's Public Document Room, 1717 H St. NW., Washington, D.C. and may be obtained from National Technical Information Service, Springfield, Va. 22161. WASH-1238 is available from NTIS at a cost of $5.45 (microfiche, $2.25) and NUREG-75/038 is available at a cost of $3.25 (microfiche, $2.25).

[2] The Federal Radiation Council has recommended that the radiation doses from all sources of radiation other than natural background and medical exposures should be limited to 5,000 millirem per year for individuals as a result of occupational exposure and should be limited to 500 millirem per year for individuals in the general population. The dose to individuals due to average natural background radiation is about 130 millirem per year.

[3] Man-rem is an expression for the summation of whole body doses to individuals in a group. Thus, if each member of a population group of 1,000 people were to receive a dose of 0.001 rem (1 millirem), or if 2 people were to receive a dose of 0.5 rem (500 millirem) each, the total man-rem dose in each case would be 1 man-rem.

[4] Although the environmental risk of radiological effects stemming from transportation accidents is currently incapable of being numerically quantified, the risk remains small regardless of whether it is being applied to a single reactor or a multireactor site.

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§ 51.53 Supplement to Environmental Report.

(a) *Operating license stage.* Each applicant for a license or for renewal of a license to operate a production or utilization facility covered by § 51.20 shall submit with its application the number of copies, as specified in § 51.55, of a separate document, entitled "Supplement to Applicant's Environmental Report—Operating License Stage," which will update "Applicant's Environmental Report—Construction Permit Stage." Unless the applicant requests the renewal of an operating license or unless otherwise required by the Commission, the applicant for an operating license for a nuclear power reactor shall submit this report only in connection with the first licensing action authorizing full power operation. In this report, the applicant shall discuss the same matters described in §§ 51.45, 51.51 and 51.52, but only to the extent that they differ from those discussed or reflect new information in addition to that discussed in the final environmental impact statement prepared by the Commission in connection with the construction permit. Unless otherwise required by the Commission, no discussion of need for power or alternative energy sources or alternative sites for the facility or of any aspect of the storage of spent fuel for the facility within the scope of the generic determination in § 51.23(a) and in accordance with § 51.23(b) is required in this report. The "Supplement to Applicant's Environment Report—Operating License Stage" may incorporate by reference any information contained in the "Applicant's Environmental Report—Construction Permit Stage," final environmental impact statement or record of decision previously prepared in connection with the construction permit.

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(b) *Post operating license stage.* Each applicant for a license or license amendment to store spent fuel at a nuclear power reactor after expiration of the operating license for the nuclear power reactor shall submit with its application the number of copies, as specified in § 51.55, of a separate document, entitled "Supplement to Applicant's Environmental Report—Post Operating License Stage." Unless otherwise required by the Commission, in accordance with the generic determination in § 51.23(a) and the provisions in § 51.23(b), the applicant shall only address the environmental impact of spent fuel storage for the term of the license applied for. The "Supplement to Applicant's Environmental Report—Post Operating License Stage" may incorporate by reference any information contained in "Applicant's Environmental Report—Construction Permit Stage," "Supplement to Applicant's Environmental Report—Operating License Stage," final environmental impact statement, supplement to final environmental impact statement or records of decision previously prepared in connection with the construction permit or operating license.

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§ 51.54 Environmental Report—Manufacturing license.

Each applicant for a license to manufacture a nuclear power reactor, or for an amendment to a license to manufacture seeking approval of the final design of the nuclear power reactor, pursuant to Appendix M of Part 50 of this chapter shall submit with its application to the Director of Nuclear Reactor Regulation the number of copies, as specified in § 51.55, of a separate document, entitled "Applicant's Environmental Report—Manufacturing License," or "Supplement to Applicant's Environmental Report—Manufacturing License." The environmental report shall address the environmental matters specified in Appendix M of Part 50 of this chapter, and shall contain the information specified in § 51.45, as appropriate.

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§ 51.55 Environmental Report—Number of copies; Distribution.

(a) Each applicant for a license to construct and operate a production or utilization facility covered by paragraphs (b)(1), (b)(2), (b)(3) or (b)(4) of § 51.20 or for a license amendment covered by paragraph (b)(5) of § 51.20 shall submit to the Director of Nuclear Reactor Regulation or the Director of Nuclear Material Safety and Safeguards, as appropriate, in accordance with § 50.30(c)(1)(iv) of Part 50 of this chapter, forty-one (41) copies of an environmental report, or any supplement to an environmental report. The applicant shall retain an additional 109 copies of the environmental report or any supplement to the environmental report for distribution to parties and Boards in the NRC proceeding, Federal, State, and local officials and any affected Indian tribes, in accordance with written instructions issued by the Director of Nuclear Reactor Regulation or the Director of Nuclear Material Safety and Safeguards, as appropriate.

(b) Each applicant for a license to manufacture a nuclear power reactor, or for an amendment to a license to manufacture seeking approval of the final design of the nuclear power reactor, pursuant to Appendix M of Part 50 of this chapter shall submit forty-one (41) copies of an environmental report or any supplement to an environmental report to the Director of Nuclear Reactor Regulation. The applicant shall retain an additional 109 copies of the

environmental report or any supplement to the environmental report for distribution to parties and Boards in the NRC proceeding, Federal, State, and local officials and any affected Indian tribes, in accordance with written instructions issued by the Director of Nuclear Reactor Regulation.

Environmental Reports—Materials Licenses

§ 51.60 Environmental Report—Materials licenses.

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(a) Each applicant for a license or other form of permission, or an amendment to or renewal of a license or other form of permission issued pursuant to Parts 30, 32, 33, 34, 35, 40, 61, 70 and/or 72 of this chapter, and covered by paragraphs (b)(1)–(b)(6) of this section, shall submit with its application to the Director of Nuclear Material Safety and Safeguards the number of copies, as specified in § 51.66, of a separate document, entitled "Applicant's Environmental Report" or "Supplement to Applicant's Environmental Report," as appropriate. The "Applicant's Environmental Report" shall contain the information specified in § 51.45. If the application is for an amendment to or a renewal of a license

or other form of permission for which the applicant has previously submitted an environmental report, the supplement to applicant's environmental report may be limited to incorporating by reference, updating or supplementing the information previously submitted to reflect any significant environmental change, including any significant environmental change resulting from operational experience or a change in operations.

(b) As required by paragraph (a) of this section, each applicant shall prepare an environmental report for the following types of actions:

(1) Issuance or renewal of a license or other form of permission for:

(i) Possession and use of special nuclear material for processing and fuel fabrication, scrap recovery, or conversion of uranium hexafluoride pursuant to Part 70 of this chapter.

(ii) Possession and use of source material for uranium milling or production of uranium hexafluoride pursuant to Part 40 of this chapter.

(iii) Storage of spent fuel in an independent spent fuel storage installation (ISFSI) pursuant to Part 72 of this chapter.

(iv) Receipt and disposal of radioactive waste from other persons pursuant to Part 61 of this chapter.

(v) Processing of source material for extraction of rare earth and other metals.

(vi) Use of radioactive tracers in field flood studies involving secondary and tertiary oil and gas recovery.

(2) Issuance of an amendment that would authorize or result in (i) a significant expansion of a site, (ii) a significant change in the types of effluents, (iii) a significant increase in the amounts of effluents, (iv) a significant increase in individual or cumulative occupational radiation exposure, (v) a significant increase in the potential for or consequences from radiological accidents, or (vi) a significant increase in spent fuel storage capacity, in a license or other form of permission to conduct an activity listed in paragraph (b)(1) of this section.

(3) Termination of a license for the possession and use of source material for uranium milling.

(4) Amendment of a license to authorize the decommissioning of an independent spent fuel storage installation (ISFSI) pursuant to Part 72 of this chapter.

(5) Issuance of a license amendment pursuant to Part 61 of this chapter authorizing (i) closure of a land disposal site, (ii) transfer of the license to the disposal site owner for the purpose of institutional control, or (iii) termination of the license at the end of the institutional control period.

(6) Any other licensing action for which the Commission determines an Environmental Report is necessary.

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§ 51.61 Environmental report—independent spent fuel storage installation (ISFSI) license.

Each applicant for issuance of a license for storage of spent fuel in an independent spent fuel storage installation (ISFSI) pursuant to Part 72 of this chapter shall submit with its application to the Director of Nuclear Material Safety and Safeguards the number of copies, as specified in § 51.66 of a separate document, entitled "Applicant's Environmental Report—ISFSI License." The environmental report shall contain the information specified in § 51.45 and shall address the siting evaluation factors contained in Subpart E of Part 72 of this chapter. Unless otherwise required by the Commission, in accordance with the generic determination in § 51.23(a) and the provisions of § 51.23(b), no discussion of the environmental impact of the storage of spent fuel at an ISFSI beyond the term of the license or amendment applied for is required in an environmental report submitted by an applicant for an initial license for storage of spent fuel in an ISFSI, or any amendment thereto.

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§ 51.62 Environmental report—Land disposal of radioactive waste licensed under 10 CFR Part 61.

(a) Each applicant for issuance of a license for land disposal of radioactive waste pursuant to Part 61 of this chapter shall submit with its application to the Director of Nuclear Material Safety and Safeguards the number of copies, as specified in § 51.66 of a separate document, entitled "Applicant's Environmental Report—License for Land Disposal of Radioactive Waste." The environmental report and any supplement to the environmental report may incorporate by reference information contained in the application or in any previous application, statement or report filed with the Commission *provided* that such references are clear and specific and that copies of the information so incorporated are available in the NRC Public Document Room at 1717 H Street, N.W., Washington, D.C. and in any public document room established by the Commission near the proposed land disposal site.

(b) The environmental report shall contain the information specified in § 51.45, shall address the applicant's environmental monitoring program required by §§ 61.12(l), 61.53 and 61.59(b) of this chapter, and shall be as complete as possible in the light of information that is available at the time the environmental report is submitted.

(c) The applicant shall supplement the environmental report in a timely manner as necessary to permit the Commission to review, prior to issuance, amendment or renewal of a license, new information regarding the environmental impact of previously proposed activities, information regarding the environmental impact of any changes in previously proposed activities, or any significant new information regarding the environmental impact of closure activities and long-term performance of the disposal site.

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§ 51.66 Environmental Report—Number of copies; Distribution.

(a) Each applicant for a license or other form of permission, or an amendment to or renewal of a license or other form of permission issued pursuant to Parts 30, 32, 33, 34, 35, 40, 61, 70 and/or 72 of this chapter, and covered by paragraphs (b)(1)-(b)(6) of § 51.60; or by §§ 51.61 or 51.62 shall submit to the Director of Nuclear Material Safety and Safeguards an environmental report or any supplement to an environmental report in the number of copies specified. The applicant shall retain additional copies of the environmental report or any supplement to the environmental report in the number of copies specified for distribution to Federal, State, and local officials and any affected Indian tribes in accordance with written instructions issued by the Director of Nuclear Material Safety and Safeguards.

(b)

ENVIRONMENTAL REPORT

Type of licensing action	Number of copies to be submitted with application	Number of copies to be retained by applicant for subsequent distribution
Licensing actions requiring environmental impact statements pursuant to § 51.20(b)	25 copies	125 copies
Licensing actions requiring environmental assessments pursuant to § 51.21	15 copies	None

Environmental Reports—Rulemaking

§ 51.68 Environmental Report—Rulemaking.

Petitioners for rulemaking requesting amendments of Parts 30, 31, 32, 33, 34, 35, 40 or 70 of this chapter concerning the exemption from licensing and regulatory requirements of or authorizing general licenses for any equipment, device, commodity or other product containing byproduct material, source material or special nuclear material shall submit with the petition

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the number of copies, as specified in § 51.69, of a separate document entitled "Petitioner's Environmental Report," which shall contain the information specified in § 51.45.

§ 51.69 Environmental Report—Number of copies.

Petitioners for rulemaking covered by § 51.68 shall submit fifty (50) copies of

an environmental report or any supplement to an environmental report.

Environmental Impact Statements

Draft Environmental Impact Statements—General Requirements

§ 51.70 Draft Environmental Impact Statement—General.

(a) The NRC staff will prepare a draft environmental impact statement as soon as practicable after publication of the notice of intent to prepare an environmental impact statement and completion of the scoping process. To the fullest extent practicable, environmental impact statements will be prepared concurrently or integrated with environmental impact analyses and related surveys and studies required by other Federal law.

(b) The draft environmental impact statement will be concise, clear and analytic, will be written in plain language with appropriate graphics, will state how alteratives considered in it and decisions based on it will or will not achieve the requirements of sections 101 and 102(1) of NEPA and of any other relevant and applicable environmental laws and policies, will identify any methodologies used and sources relied upon, and will be supported by evidence that the necessary environmental analyses have been made. The format provided in section 1(a) of Appendix A of this subpart should be used. The NRC staff will independently evaluate and be responsible for the reliability of all information used in the draft environmental impact statement.

(c) The Commission will cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and State and local requirements, in accordance with 40 CFR 1506.2 (b) and (c).

§ 51.71 Draft Environmental Impact Statement—Contents.

(a) *Scope.* The draft environmental impact statement will be prepared in accordance with the scope decided upon in the scoping process required by §§ 51.26 and 51.29. As appropriate and to the extent required by the scope, the draft statement will address the topics in paragraphs (b), (c), (d) and (e) of this section and the matters specified in §§ 51.45, 51.50, 51.51, 51.52, 51.53, 51.54, 51.61 and 51.62.

(b) *Analysis of major points of view.* To the extent sufficient information is available, the draft environmental impact statement will include consideration of major points of view concerning the environmental impacts of the proposed action and the alternatives, and contain an analysis of significant problems and objections raised by other Federal, State, and local agencies, by any affected Indian tribes, and by other interested persons.

(c) *Status of compliance.* The draft environmental impact statement will list all Federal permits, licenses, approvals, and other entitlements which must be obtained in implementing the proposed action and will describe the status of compliance with those requirements. If it is uncertain whether a Federal permit, license, approval, or other entitlement is necessary, the draft environmental impact statement will so indicate.

(d) *Analysis.* The draft environmental impact statement will include a preliminary analysis which considers and balances the environmental and other effects of the proposed action and the alternatives available for reducing or avoiding adverse environmental and other effects, as well as the environmental, economic, technical and other benefits of the proposed action. The analysis will, to the fullest extent practicable, quantify the various factors considered. To the extent that there are important qualitative considerations or factors that cannot be quantified, these considerations or factors will be discussed in qualitative terms. The analysis will indicate what other interests and considerations of Federal policy, including factors not related to environmental quality, are thought to offset any adverse environmental effects of the proposed action identified pursuant to paragraph (a) of this section. Due consideration will be given to compliance with environmental quality standards and requirements which have been imposed by Federal, State, regional, and local agencies having responsibility for environmental protection, including applicable zoning and land-use regulations and water pollution limitations or requirements promulgated or imposed pursuant to the Federal Water Pollution Control Act. The environmental impact of the proposed action will be considered in the analysis with respect to matters covered by such standards and requirements irrespective of whether a certification or license from the appropriate authority has been obtained.[3] While satisfaction of Commission standards and criteria pertaining to radiological effects will be necessary to meet the licensing requirements of the Atomic Energy Act, the analysis will, for the purposes of NEPA, consider the radiological effects of the proposed action and alternatives.

(e) *Preliminary recommendation.* The draft environmental impact statement normally will include a preliminary recommendation by the NRC staff respecting the proposed action. This preliminary recommendation will be based on the information and analysis described in paragraphs (a)–(d) of this section and §§ 51.75, 51.78, 51.80 and 51.85, as appropriate, and will be reached after weighing the costs and benefits of the proposed action and considering reasonable alternatives. In lieu of a preliminary recommendation, the NRC staff may indicate in the draft statement that two or more alternatives remain under consideration.

§ 51.72 Supplement to draft environmental impact statement.

(a) The NRC staff will prepare a supplement to a draft environmental impact statement for which a notice of availability has been published in the **Federal Register** as provided in § 51.117, if:

(1) There are substantial changes in the proposed action that are relevant to environmental concerns; or

(2) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

(b) The NRC staff may prepare a supplement to a draft environmental impact statement when, in its opinion, preparation of a supplement will further the purposes of NEPA.

(c) The supplement to a draft environmental impact statement will be prepared and noticed in the same manner as the draft environmental impact statement except that a scoping process need not be used.

§ 51.73 Request for comments on draft environmental impact statement.

Each draft environmental impact statement and each supplement to a draft environmental impact statement distributed in accordance with § 51.74, and each news release provided pursuant to § 51.74(d) will be accompanied by or include a request for comments on the proposed action and on the draft environmental impact statement or any supplement to the draft environmental impact statement and will state where comments should be submitted and the date on which the comment period closes. A minimum comment period of 45 days will be provided. The comment period will be calculated from the date on which the Environmental Protection Agency notice stating that the draft statement or the

[3] Compliance with the environmental quality standards and requirements of the Federal Water Pollution Control Act (imposed by EPA or designated permitting states) is not a substitute for and does not negate the requirement for NRC to weigh all environmental effects of the proposed action, including the degradation, if any, of water quality, and to consider alternatives to the proposed action which are available for reducing adverse effects. Where an environmental assessment of aquatic impact from plant discharges is available from the permitting authority then the NRC will consider the assessment in its determination of the magnitude of environmental impacts for striking an overall cost-benefit balance. When no such assessment of aquatic impacts is available from the permitting authority, then NRC will establish on its own or in conjunction with the permitting authority and other agencies having relevant expertise the magnitude of potential impacts for striking an overall cost-benefit balance for the facility.

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supplement to the draft statement has been filed with EPA is published in the **Federal Register**. If no comments are provided within the time specified, it will be presumed, unless the agency or person requests and extension of time, that the agency or person has no comment to make. To the extent practicable, NRC staff will grant reasonable requests for extensions of time of up to fifteen (15) days.

§ 51.74 Distribution of draft environmental impact statement and supplement to draft environmental impact statement; News releases.

(a) A copy of the draft environmental impact statement will be distributed to:

(1) The Environmental Protection Agency.

(2) Any other Federal agency which has special expertise or jurisdiction by law with respect to any environmental impact involved or which is authorized to develop and enforce relevant environmental standards.

(3) The applicant or petitioner for rulemaking and any other party to the proceeding.

(4) Appropriate State and local agencies authorized to develop and enforce relevant environmental standards.

(5) Appropriate State, regional and metropolitan clearinghouses.

(6) Appropriate Indian tribes when the proposed action may have an environmental impact on a reservation.

(7) Upon written request, any organization or group included in the master list of interested organizations and groups maintained under § 51.122.

(8) Upon written request, any other person to the extent available.

(b) Additional copies will be made available in accordance with § 51.123.

(c) A supplement to a draft environmental impact statement will be distributed in the same manner as the draft environmental impact statement to which it relates.

(d) News releases stating the availability for comment and place for obtaining or inspecting a draft environmental statement or supplement will be provided to local newspapers and other appropriate media.

(e) A notice of availability will be published in the **Federal Register** in accordance with § 51.117.

Draft Environmental Impact Statements—Production and Utilization Facilities

§ 51.75 Draft environmental impact statement—Construction permit.

A draft environmental impact statement relating to issuance of a construction permit for a production or utilization facility will be prepared in accordance with the procedures and measures described in §§ 51.70, 51.71, 51.72 and 51.73. The contribution of the environmental effects of the uranium fuel cycle activities specified in § 51.51 shall be evaluated on the basis of impact values set forth in Table S–3, Table of Uranium Fuel Cycle Environmental Data, which shall be set out in the draft environmental impact statement. With the exception of radon-222 and technetium-99 releases, no further discussion of fuel cycle release values and other numerical data that appear explicity in the Table shall be required.[4] The impact statement shall take account of dose commitments and health effects from fuel cycle effluents set forth in Table S–3 and shall in addition take account of economic, socioeconomic, and possible cumulative impacts and such other fuel cycle impacts as may reasonably appear significant.

§ 51.76 Draft enviornmental impact statement—Manufacturing license.

A draft environmental impact statement relating to issuance of a license to manufacture a nuclear power reactor will address the environmental matters specified in Appendix M of Part 50 of this chapter. The draft environmental impact statement will include a request for comments as provided in § 51.73.

§ 51.77 Distribution of draft environmental impact statement.

(a) In addition to the distribution authorized by § 51.74, a copy of a draft environmental statement for a licensing action for a production or utilization facility, except an action authorizing issuance, amendment or renewal of a license to manufacture a nuclear power reactor pursuant to 10 CFR Part 50, Appendix M will also be distributed to:

(1) The chief executive of the municipality or county identified in the draft environmental impact statement as the preferred site for the proposed facility or activity.

(2) Upon request, the chief executive of each municipality or county identified in the draft environmental impact statement as an alternative site.

(b) Additional copies will be made available in accordance with § 51.123.

Draft Environmental Impact Statement—Materials Licenses

§ 51.80 Draft environmental impact statement—Material license.

(a) The NRC staff will either prepare a draft environmental impact statement or as provided in § 51.92, a supplement to a final environmental impact statement for each type of action identified in § 51.20(b) (7)–(12). Except as the context may otherwise require, procedures and measures similar to those described in §§ 51.70, 51.71, 51.72 and 51.73 will be followed.

(b) *Independent spent fuel storage installation (ISFSI).* Unless otherwise determined by the Commission, and in accordance with the generic determination in § 51.23(a) and the provisions of § 51.23(b), a draft environmental impact statement on the issuance of an initial license for storage of spent fuel at an independent spent fuel storage installation (ISFSI) or any amendment thereto, will address environmental impacts of spent fuel storage only for the term of the license or amendment applied for.

§ 51.81 Distribution of draft environmental impact statement.

Copies of the draft environmental impact statement and any supplement to the draft environmental impact statement will be distributed in accordance with the provisions of § 51.74.

Draft Environmental Impact Statements—Rulemaking

§ 51.85 Draft environmental impact statement—Rulemaking.

Except as the context may otherwise require, procedures and measures similar to those described in §§ 51.70, 51.71, 51.72 and 51.73 will be followed in proceedings for rulemaking for which the Commission has determined to prepare an environmental impact statement.

§ 51.86 Distribution of draft environmental impact statement.

Copies of the draft environmental impact statement and any supplement to the draft environmental impact statement will be distributed in accordance with the provisions of § 51.74.

Legislative Environmental Impact Statements—Proposals for Legislation

§ 51.88 Proposals for legislation.

The Commission will, as a matter of policy, follow the provisions of 40 CFR 1506.8 regarding the NEPA process for proposals for legislation.

Final Environmental Impact Statements—General Requirements

§ 51.90 Final environmental impact statement—General.

After receipt and consideration of comments requested pursuant to §§ 51.73 and 51.117, the NRC staff will prepare a final environmental impact statement in accordance with the requirements in §§ 51.70(b) and 51.71 for a draft environmental impact statement. The format provided in section 1(a) of Appendix A of this subpart should be used.

[4] Values for releases of Rn-222 and Tc-99 are not given in the Table. The amount and significance of Rn-222 releases from the fuel cycle and Tc-99 releases from waste management or reprocessing activities shall be considered in the draft environmental impact statement and may be the subject of litigation in individual licensing proceedings.

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§ 51.91 Final environmental impact statement—Contents.

(a)(1) The final environmental impact statement will include responses to any comments on the draft environmental impact statement or on any supplement to the draft environmental impact statement. Responses to comments may include:

(i) Modification of alternatives, including the proposed action;

(ii) Development and evaluation of alternatives not previously given serious consideration;

(iii) Supplementation or modification of analyses;

(iv) Factual corrections;

(v) Explanation of why comments do not warrant further response, citing sources, authorities or reasons which support this conclusion.

(2) All substantive comments received on the draft environmental impact statement or any supplement to the draft environmental impact statement (or summaries thereof where the response has been exceptionally voluminous) will be attached to the final statement, whether or not each comment is discussed individually in the text of the statement.

(3) If changes in the draft environmental impact statement in response to comments are minor and are confined either to factual corrections or to explanations of why the comments do not warrant further response, the changes may be made by attaching errata sheets to the draft statement. The entire document with a new cover may then be issued as the final environmental impact statement.

(b) The final environmental impact statement will discuss any relevant responsible opposing view not adequately discussed in the draft environmental impact statement or in any supplement to the draft environmental impact statement, and respond to the issues raised.

(c) The final environmental impact statement will state how the alternatives considered in it and decisions based on it will or will not achieve the requirements of sections 101 and 102(1) of NEPA and of any other relevant and applicable environmental laws and policies.

(d) The final environmental impact statement will include a final analysis and a final recommendation on the action to be taken.

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§ 51.92 Supplement to final environmental impact statement.

(a) If the proposed action has not been taken, the NRC staff will prepare a supplement to a final environmental impact statement for which a notice of availability has been published in the **Federal Register** as provided in § 51.118, if:

(1) There are substantial changes in the proposed action that are relevant to environmental concerns; or

(2) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.

(b) The NRC staff may prepare a supplement to a final environmental impact statement when, in its opinion, preparation of a supplement will further the purposes of NEPA.

(c) The supplement to a final environmental impact statement will be prepared in the same manner as the final environmental impact statement except that a scoping process need not be used.

(d)(1) A supplement to a final environmental impact statement will be accompanied by or will include a request for comments as provided in § 51.73 and a notice of availability will be published in the **Federal Register** as provided in § 51.117 if the conditions described in paragraph (a) of this section apply.

(2) If comments are not requested, a notice of availability of a supplement to a final environmental impact statement will be published in the **Federal Register** as provided in § 51.118.

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§ 51.93 Distribution of final environmental impact statement and supplement to final environmental impact statement; News releases.

(a) A copy of the final environmental impact statement will be distributed to:

(1) The Environmental Protection Agency.

(2) The applicant or petitioner for rulemaking and any other party to the proceeding.

(3) Appropriate State, regional and metropolitan clearinghouses.

(4) Each commenter.

(b) Additional copies will be made available in accordance with § 51.123.

(c) If the final environmental impact statement is unusually long or there are so many comments on a draft environmental impact statement or any supplement to a draft environmental impact statement that distribution of the entire final statement to all commenters is impracticable, a summary of the final statement and the substantive comments will be distributed. When the final environmental impact statement has been prepared by adding errata sheets to the draft environmental impact statement as provided in § 51.91(a)(3), only the comments, the responses to the comments and the changes to the environmental impact statement will be distributed.

(d) A supplement to a final environmental impact statement will be distributed in the same manner as the final environmental impact statement to which it relates.

(e) News releases stating the availability and place for obtaining or inspecting a final environmental impact statement or supplement will be provided to local newspapers and other appropriate media.

(f) A notice of availability will be published in the **Federal Register** in accordance with § 51.118.

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§ 51.94 Requirement to consider final environmental impact statement.

The final environmental impact statement, together with any comments and any supplement, will accompany the application or petition for rulemaking through, and be considered in, the Commission's decisionmaking process. The final environmental impact statement, together with any comments and any supplement, will be made a part of the record of the appropriate adjudicatory or rulemaking proceeding.

Final Environmental Impact Statements—Production and Utilization Facilities

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§ 51.95 Supplement to final environmental impact statement.

(a) *Operating license stage.* In connection with the issuance of an operating license for a production or utilization facility, the NRC staff will prepare a supplement to the final environmental impact statement on the construction permit for that facility, which will update the prior environmental review. The supplement may incorporate by reference any information contained in the final environmental impact statement or in the record of decision prepared in connection with the construction permit for that facility. The supplement will include a request for comments as provided in § 51.73. The supplement will only cover matters which differ from, or which reflect significant new information concerning matters discussed in the final environmental impact statement. Unless otherwise determined by the Commission, a supplement on the operation of a nuclear power reactor will not include discussion of need for power or alternative energy sources or alternative sites or of any aspect of the storage of spent fuel for the nuclear power reactor within the scope of the generic determination in § 51.23(a) and in accordance with § 51.23(b), and will only be prepared in connection with the first licensing action authorizing full power operation.

(b) *Post operating license stage.* In connection with the issuance, amendment or renewal of a license to store spent fuel at a nuclear power

reactor after expiration of the operating license for the nuclear power reactor, the NRC staff will prepare a supplemental environmental impact statement for the post operating license stage or an environmental assessment, as appropriate, which will update the prior environmental review. The supplement or assessment may incorporate by reference any information contained in the final environmental impact statement, the supplement to the final environmental impact statement—operating license stage, or in the records of decision prepared in connection with the construction permit or the operating license for that facility. The supplement will include a request for comments as provided in § 51.73. Unless otherwise required by the Commission, in accordance with the generic determination in § 51.23(a) and the provisioins of § 51.23(b), a supplemental environmental impact statement for the post operating licence stage or an environmental assessment as appropriate, will address the environmental impacts of spent fuel storage only for the term of the license, license amendment or license renewal applied for.

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§ 51.97 Final environmental impact statement—Materials license.

(a) *Independent spent fuel storage installation (ISFSI).* Unless otherwise determined by the Commission, and in accordance with the generic determination in § 51.23(a) and the provisions of § 51.23(b), a final environmental impact statement on the issuance of an initial license for the storage of spent fuel at an independent spent fuel storage installation (ISFSI) or any amendment thereto, will address environmental impacts of spent fuel storage only for the term of the license or amendment applied for.

(b) [Reserved]

§ 51.99 [Reserved]

NEPA Procedure and Administrative Action

General

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§ 51.100 Timing of Commission action.

(a)(1) Except as provided in § 51.13 and paragraph (b) of this section, no decision on a proposed action, including the issuance of a permit, license, or other form of permission, or amendment

to or renewal of a permit, license, or other form of permission, or the issuance of an effective regulation, for which an environmental impact statement is required, will be made and no record of decision will be issued until the later of the following dates:

(i) Ninety (90) days after publication by the Environmental Protection Agency of a **Federal Register** notice stating that the draft environmental impact statement has been filed with EPA.

(ii) Thirty (30) days after publication by the Environmental Protection Agency of a **Federal Register** notice stating that the final environmental impact statement has been filed with EPA.

(2) If a notice of filing of a final environmental impact statement is published by the Environmental Protection Agency within ninety (90) days after a notice of filing of a draft environmental impact statement has been published by EPA, the minimum thirty (30) day period and the minimum ninety (90) day period may run concurrently to the extent they overlap.

(b) In any rulemaking proceeding for the purpose of protecting the public health or safety or the common defense and security, the Commission may make and publish the decision on the final rule at the same time that the Environmental Protection Agency publishes the **Federal Register** notice of filing of the final environmental impact statement.

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§ 51.101 Limitations on actions.

(a) Until a record of decision is issued in connection with a proposed licensing or regulatory action for which an environmental impact statement is required under § 51.20, or until a final finding of no significant impact is issued in connection with a proposed licensing or regulatory action for which an environmental assessment is required under § 51.21:

(1) No action concerning the proposal may be taken by the Commission which would (i) have an adverse environmental impact, or (ii) limit the choice of reasonable alternatives.

(2) Any action concerning the proposal taken by an applicant which would (i) have an adverse environmental impact, or (ii) limit the choice of reasonable alternatives may be grounds for denial of the license. In the case of an application covered by §§ 30.32(f), 40.31(f), 50.10(c), 70.21(f), or 72.11 and 72.20 of this chapter, the provisions of this paragraph will be applied in accordance with §§ 30.33(a)(5), 40.32(e), 50.10 (c) and (e), 70.23(a)(7), or 72.31(b) of this chapter, as appropriate.

(b) While work on a required program environmental impact statement is in progress, the Commission will not undertake in the interim any major Federal action covered by the program which may significantly affect the quality of the human environment unless such action:

(1) Is justified independently of the program;

(2) Is itself accompanied by an adequate environmental impact statement; and

(3) Will not prejudice the ultimate decision on the program. Absent any satisfactory explanation to the contrary, interim action which tends to determine subsequent development or limit reasonable alternatives, will be considered prejudicial.

(c) This section does not preclude any applicant for an NRC permit, license, or other form of permission, or amendment to or renewal of an NRC permit, license, or other form of permission, (1) from developing any plans or designs necessary to support an application; or (2) after prior notice and consultation with NRC staff, (i) from performing any physical work necessary to support an application, or (ii) from performing any other physical work relating to the proposed action if the adverse environmental impact of that work is de minimis.

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§ 51.102 Requirement to provide a record of decision; preparation.

(a) A Commission decision on any action for which a final environmental impact statement has been prepared shall be accompanied by or include a concise public record of decision.

(b) Except as provided in paragraph (c) of this section, the record of decision will be prepared by the NRC staff director authorized to take the action.

(c) When a hearing is held on the proposed action under the regulations in Subpart G of Part 2 of this chapter or when the action can only be taken by the Commissioners acting as a collegial body, the initial decision of the presiding officer or the final decision of the Atomic Safety and Licensing Appeal Board or the final decision of the Commissioners acting as a collegial body will constitute the record of decision. An initial or final decision constituting the record of decision will be distributed as provided in § 51.93.

§ 51.103 Record of decision—General.

(a) The record of decision required by § 51.102 shall be clearly identified and shall:

(1) State the decision.

(2) Identify all alternatives considered by the Commission in reaching the decision, state that these alternatives were included in the range of alternatives discussed in the environmental impact statement, and specify the alternative or alternatives which were considered to be environmentally preferable.

(3) Discuss preferences among alternatives based on relevant factors, including economic and technical considerations, the NRC's statutory mission, and any essential considerations of national policy, which were balanced by the Commission in making the decision and state how these considerations entered into the decision.

(4) State whether the Commission has taken all practicable measures within its jurisdiction to avoid or minimize environmental harm from the alternative selected, and if not, to explain why those measures were not adopted. Summarize any license conditions and monitoring programs adopted in connection with mitigation measures.

(b) The record of decision may be integrated into any other record prepared by the Commission in connection with the action.

(c) The record of decision may incorporate by reference material contained in a final environmental impact statement.

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§ 51.104 NRC proceeding using public hearings; Consideration of environmental impact statement.

(a)(1) In any proceeding in which (i) a hearing is held on the proposed action, (ii) a final environmental impact statement has been prepared in connection with the proposed action, and (iii) matters within the scope of NEPA and this subpart are in issue, the NRC staff may not offer the final environmental impact statement in evidence or present the position of the NRC staff on matters within the scope of NEPA and this subpart until the final environmental impact statement is filed with the Environmental Protection Agency, furnished to commenting agencies and made available to the public.

(2) Any party to the proceeding may take a position and offer evidence on the aspects of the proposed action within the scope of NEPA and this subpart in accordance with the provisions of Part 2 of this chapter applicable to that proceeding or in accordance with the terms of the notice of hearing.

(3) In the proceeding the presiding officer will decide those matters in controversy among the parties within the scope of NEPA and this subpart.

(b) In any proceeding in which a hearing is held where the NRC staff has determined that no environmental impact statement need be prepared for the proposed action, unless the Commission orders otherwise, any party to the proceeding may take a position and offer evidence on the aspects of the proposed action within the scope of NEPA and this subpart in accordance with the provisions of Part 2 of this

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chapter applicable to that proceeding or in accordance with the terms of the notice of hearing. In the proceeding, the presiding officer will decide any such matters in controversy among the parties.

Production and Utilization Facilities

§ 51.105 Public hearings in proceedings for issuance of construction permits or licenses to manufacture.

(a) In addition to complying with applicable requirements of § 51.104, in a proceeding for the issuance of a construction permit for a nuclear power reactor, testing facility, fuel reprocessing plant or isotopic enrichment plant, or for the issuance of a license to manufacture, the presiding officer will:

(1) Determine whether the requirements of section 102(2) (A), (C), and (E) of NEPA and the regulations in this subpart have been met;

(2) Independently consider the final balance among conflicting factors contained in the record of the proceeding with a view to determining the appropriate action to be taken;

(3) Determine, after weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, whether the construction permit or license to manufacture should be issued, denied, or appropriately conditioned to protect environmental values;

(4) Determine, in an uncontested proceeding, whether the NEPA review conducted by the NRC staff has been adequate; and

(5) Determine, in a contested proceeding, whether in accordance with the regulations in this subpart, the construction permit or license to manufacture should be issued as proposed.

§ 51.106 Public hearings in proceedings for issuance of operating licenses.

(a) Consistent with the requirements of this section and as appropriate, the presiding officer in an operating license hearing shall comply with any applicable requirements of §§ 51.104 and 51.105.

(b) During the course of a hearing on an application for issuance of an operating license for a nuclear power reactor, or a testing facility, the presiding officer may authorize, pursuant to § 50.57(c) of this chapter, the loading of nuclear fuel in the reactor core and limited operation within the scope of § 50.57(c) of this chapter, upon compliance with the procedures described therein. In any such hearing, where any party opposes such authorization on the basis of matters covered by Subpart A of this part, the provisions of §§ 51.104 and 51.105 will apply, as appropriate.

(c) The presiding officer in an operating license hearing shall not admit contentions proffered by any party concerning need for power or alternative energy sources or alternative sites for the facility for which an operating license is requested.

(d) The presiding officer in an operating license hearing shall not raise issues concerning alternative sites for the facility for which an operating license is requested *sua sponte*.

Materials Licenses

§ 51.108 [Reserved]

Rulemaking

§ 51.110 [Reserved]

Public Notice of and Access to Environmental Documents

§ 51.116 Notice of intent.

(a) In accordance with § 51.26, the appropriate NRC staff director will publish in the **Federal Register** a notice of intent stating that an environmental impact statement will be prepared. The notice will contain the information specified in § 51.27.

(b) Copies of the notice will be sent to appropriate Federal, State, and local agencies, and Indian tribes, appropriate State, regional, and metropolitan clearinghouses and to interested persons upon request. A public announcement of the notice of intent will also be made.

§ 51.117 Draft environmental impact statement—Notice of availability.

(a) Upon completion of a draft environmental impact statement or any supplement to a draft environmental impact statement, the appropriate NRC staff director will publish a notice of availability of the statement in the **Federal Register**.

(b) The notice will request comments on the proposed action and on the draft statement or any supplement to the draft statement and will specify where comments should be submitted and when the comment period expires.

(c) The notice will (1) state that copies of the draft statement or any supplement to the draft statement are available for public inspection; (2) state where inspection may be made, and (3) state that any comments of Federal, State, and local agencies, Indian tribes or other interested persons will be made available for public inspection when received.

(d) Copies of the notice will be sent to appropriate Federal, State, and local agencies, and Indian tribes, appropriate State, regional, and metropolitan clearinghouses, and to interested persons upon request.

§ 51.118 Final Environmental Impact Statement—Notice of Availability.

Upon completion of a final environmental impact statement or any supplement to a final environmental impact statement, the appropriate NRC staff director will publish a notice of availability of the statement in the **Federal Register**. The notice will state that copies of the final statement or any supplement to the final statement are available for public inspection and where inspection may be made. Copies of the notice will be sent to appropriate Federal, State, and local agencies, and Indian tribes, appropriate State, regional, and metropolitan clearinghouses and to interested persons upon request.

§ 51.119 Publication of Finding of No Significant Impact; distribution.

(a) As required by § 51.35, the appropriate NRC staff director will publish the finding of no significant impact in the **Federal Register**. The finding of no significant impact will be identified as a draft or final finding, and will contain the information specified in §§ 51.32 or 51.33, as appropriate. A draft finding of no significant impact will include a request for comments which specifies where comments should be submitted and when the comment period expires.

(b) The finding will state that copies of the finding, the environmental assessment setting forth the basis for the finding and any related environmental documents are available for public inspection and where inspection may be made.

(c) A copy of a final finding will be sent to appropriate Federal, State, and local agencies, and Indian tribes, appropriate State, regional, and metropolitan clearinghouses, the applicant or petitioner for rulemaking and any other party to the proceeding, and if a draft finding was issued, to each commenter. Additional copies will be made available in accordance with § 51.123.

§ 51.120 Availability of environmental documents for public inspection.

Copies of environmental reports, draft and final environmental impact statements, environmental assessments, and findings of no significant impact, together with any related comments and environmental documents, will be placed in the NRC's Public Document Room at 1717 H Street, N.W., Washington, D.C., and in any public document room established by the Commission in the vicinity of the site of the proposed facility or licensed activity where a file of documents pertaining to such proposed facility or activity is maintained.

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§ 51.121 Status of NEPA actions.

Individuals or organizations desiring information on the NRC's NEPA process or on the status of specific NEPA actions should address inquiries to:

Utilization facilities: Director, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: (301) 492–7891.

Production facilities: Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: (301) 427–4063.

Materials licenses: Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: (301) 427–4083.

Rulemaking: Director, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: (301) 427–4341.

General Environmental Matters: Executive Director for Operations, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Telephone: (301) 492–7511.

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§ 51.122 List of interested organizations and groups.

The NRC Office of Administration will maintain a master list of organizations and groups, including relevant conservation commissions, known to be interested in the Commission's licensing and regulatory activities. The NRC Office of Administration with the assistance of the appropriate NRC staff director will select from this master list those organizations and groups that may have an interest in a specific NRC NEPA action and will promptly notify such organizations and groups of the availability of a draft environmental impact statement or a draft finding of no significant impact.

50 FR 21036

§ 51.123 Charges for environmental documents; distribution to public; distribution to governmental agencies.

(a) *Distribution to Public.* Upon written request to the Director, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, and to the extent available, single copies of draft environmental impact statements and draft findings of no significant impact will be made available to interested persons without charge. Single copies of final environmental impact statements and final findings of no significant impact will also be provided without charge to the persons listed in § 51.93(a) and § 51.119(c), respectively. When more than one copy of an environmental impact statement or a finding of no significant impact is requested or when available NRC copies have been exhausted, the requestor will be advised that the NRC will provide copies at the charges specified in § 9.14 of this chapter.

(b) *Distribution to Governmental Agencies.* Upon written request to the Director, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555, and to the extent available, copies of draft and final environmental impact statements and draft final findings of no significant impact will be made available in the number requested to Federal, State and local agencies, Indian tribes, and State, regional and metropolitan clearinghouses. When available NRC copies have been exhausted, the requester will be advised that the NRC will provide copies at the charges specified in §9.14 of this chapter.

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(c) *Charges.* Charges for the reproduction of environmental documents by the NRC at locations other than the NRC Public Document Room located in Washington, D.C. vary according to location.

Commenting

§ 51.124 Commission duty to comment.

It is the policy of the Commission to comment on draft environmental impact statements prepared by other Federal agencies, consistent with the provisions of 40 CFR 1503.2 and 1503.3.

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Responsible Official

§ 51.125 Responsible official.

The Executive Director for Operations shall be responsible for overall review of NRC NEPA compliance, except for matters under the jurisdiction of a presiding officer, administrative judge, administrative law judge, Atomic Safety and Licensing Board, Atomic Safety and Licensing Appeal Board, or the Commission acting as a collegial body.

Appendix A to Subpart A—Format for Presentation of Material in Environmental Impact Statements

1. General
2. Cover sheet
3. Summary
4. Purpose of and need for action
5. Alternatives including the proposed action
6. Affected environment
7. Environmental consequences and mitigating actions
8. List of preparers
9. Appendices

1. *General.*

(a) The Commission will use a format for environmental impact statements which will encourage good analysis and clear presentation of the alternatives including the proposed action. The following standard format for environmental impact statements should be followed unless there is a compelling reason to do otherwise:

(1) Cover sheet*
(2) Summary*
(3) Table of Contents
(4) Purpose of and Need for Action*
(5) Alternatives including the proposed action*
(6) Affected Environment*
(7) Environmental Consequences and Mitigating Actions*
(8) List of Preparers*
(9) List of Agencies, Organizations and Persons to Whom Copies of the Statement are Sent
(10) Substantive Comments Received and NRC Staff Responses
(11) Index
(12) Appendices (if any)*

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If a different format is used, it shall include paragraphs (1), (2), (3), (8), (9), (10), and (11) of this section and shall include the substance of paragraphs (4), (5), (6), (7), and (12) of this section, in any appropriate format.

Additional guidance on the presentation of material under the format headings identified by an asterisk is set out in sections 2.–9. of this appendix.

(b) The techniques of tiering and incorporation by reference described respectively in 40 CFR 1502.20 and 1508.28 and 40 CFR 1502.21 [38] of CEQ's NEPA regulations may be used as appropriate to aid in the presentation of issues, eliminate repetition or reduce the size of an environmental impact statement. In appropriate circumstances, draft or final environmental impact statements prepared by other Federal agencies may be adopted in whole or in part in accordance with the procedures outlined in 40 CFR 1506.3 [39] of CEQ's NEPA regulations. In final environmental impact statements, material under the following format headings will normally be presented in less than 150 pages: Purpose of and Need for Action, Alternatives Including the Proposed Action, Affected Environment, and Environmental

[38] *Tiering*—40 CFR 1502.20, 40 CFR 1508.28; *Incorporation by reference*—40 CFR 1502.21.
[39] *Adoption*—40 CFR 1506.3.

Consequences and Mitigating Actions. For proposals of unusual scope or complexity, the material presented under these format headings may extend to 300 pages.

2. *Cover sheet.*

The cover sheet will not exceed one page. It will include:

(a) The name of the NRC office responsible for preparing the statement and a list of any cooperating agencies.

(b) The title of the proposed action that is the subject of the statement with a list of the states, counties or municipalities where the facility or other subject of the action is located, as appropriate.

(c) The name, address, and telephone number of the individual in NRC who can supply further information.

(d) A designation of the statement as a draft or final statement, or a draft or final supplement.

(e) A one paragraph abstract of the statement.

(f) For draft environmental impact statements, the date by which comments must be received. This date may be specified in the form of the following or a substantially similar statement:

"Comments should be filed no later than * days after the date on which the Environmental Protection Agency notice stating that the draft environmental impact statement has been filed with EPA is published in the **Federal Register**. Comments received after the expiration of the comment period will be considered if it is practical to do so but assurance of consideration of late comments cannot be given."

3. *Summary.*

Each environmental impact statement will contain a summary which adequately and accurately summarizes the statement. The summary will stress the major issues considered. The summary will discuss the areas of controversy, will identify any remaining issues to be resolved, and will present the major conclusions are recommendations. The summary will normally not exceed 15 pages.

4. *Purpose of and need for action.*

The statement will briefly describe and specify the purpose of the need for the proposed action. The alternative of no action will be discussed. In the case of nuclear power plants, consideration will be given to the potential impact of conservation measures in determining the demand for power and consequent need for additional generating capacity.

5. *Alternatives including the proposed action.*

This section is the heart of the environmental impact statement. It will present the environmental impacts of the proposal and the alternatives in comparative form. Where important to the comparative evaluation of alternatives, appropriate mitigating measures of the alternatives will be discussed. All reasonable alternatives will be identified. The range of alternatives discussed will encompass those proposed to be considered by the ultimate decisionmaker. An otherwise reasonable alternative will not be excluded from discussion solely on the ground that it is not within the jurisdiction of the NRC.** The discussion of alternatives will take into accounts, without duplicating, the environmental information and analyses included in sections, 4., 6. and 7. of this appendix.

In the draft environmental impact statement, this section will either include a preliminary recommendation on the action to be taken, or identify the alternatives under consideration.

In the final environmental impact statement, this section will include a final recommendation on the action to be taken.

6. *Affected environment.*

The environmental impact statement will succinctly describe the environment to be affected by the proposed action. Data and analyses in the statement will be commensurate with the importance of the impact, with less important material summarized, conolidated, or simply referenced. Effort and attention will be concentrated on important issues; useless bulk will be eliminated.

7. *Environmental consequences and mitigating actions.*

This section discusses the environmental consequences of alternatives, including the proposed actions and any mitigating actions which may be taken. Alternatives eliminated from detailed study will be identified and a discussion of those alternatives will be confined to a brief statement of the reasons why the alternatives were eliminated. The level of information for each alternative considered in detail will reflect the depth of analysis required for sound decisionmaking.

The discussion will include any adverse environmental effects which cannot be avoided should the alternative be implemented, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the alternative should it be implemented. This section will include discussions of:

(a) Direct effects and their significance.

(b) Indirect effects and their significance.

(c) Possible conflicts between the alternative and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned.

(d) Means to mitigate adverse environmental impacts.

8. *List of preparers.*

The environmental impact statement will list the names and qualifications (expertise, experience, professional disciplines), of the persons who were primarily responsible for preparing the environmental impact statement or significant background papers. Persons responsible for making an independent evaluation of information submitted by the applicant or petitioner for rulemaking or others will be included in the list. Where possible, the persons who are responsible for a particular analysis, including analyses in background papers, will be identified.

9. *Appendices.*

An appendix to an environmental impact statement will:

(a) Consist of material prepared in connection with an environmental impact statement (as distinct from material which is not so prepared and which is incorporated by reference (40 CFR 1502.21)).

(b) Normally consist of material which substantiates any analysis fundamental to the impact statement. Discussion of methodology used may be placed in an appendix.

(c) Normally be analytic.

(d) Be relevant to the decision to be made.

(e) Be circulated with the environmental impact statement or be readily available on request.

Discussion of Footnotes

28. *Tiering.*

40 CFR 1502.20 states:

"Agencies are encouraged to tier their environmental impact statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review (§ 1508.28). Whenever a broad environmental impact statement has been prepared (such as a program or policy statement) and a subsequent statement or environmental assessment is then prepared on an action included within the entire program or policy (such as a site specific action) the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement and incorporate discussions from the broader statement by reference and shall concentrate on the issues specific to the subsequent action. The subsequent document shall state where the earlier document is available. Tiering may also be appropriate for different stages of actions. (Sec. 1508.28)."

40 CFR 1508.28 states:

" 'Tiering' refers to the coverage of general matters in broader environmental impact statements (such as national program or policy statements) with subsequent narrower statements or environmental analyses (such as regional or basinwide program statements or ultimately site-specific statements) incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared. Tiering is appropriate when the sequence of statements or analyses is:

"(a) From a program, plan, or policy environmental impact statement to a program, plan, or policy statement or analysis of lesser scope or to a site-specific statement or analysis.

"(b) From an environmental impact statement on a specific action at an early stage (such as need and site selection) to a supplement (which is preferred) or a subsequent statement or analysis at a later stage (such as environmental mitigation). Tiering in such cases is appropriate when it helps the lead agency to focus on the issues which are ripe for decision and exclude from consideration issues already decided or not yet ripe."

Incorporation by reference. 40 CFR 1502.21 states:

"Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. The incorporated

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* The number of days in the comment period should be inserted. The minimum comment period is 45 days (see § 51.73.)

** With respect to limitations on NRC's NEPA authority and responsibility imposed by the Federal Water Pollution Control Act Amendments of 1972, see §§ 51.10(c), 51.22(c)(17) and 51.71(d).

material shall be cited in the statement and its content briefly described. No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment. Material based on proprietary data which is itself not available for review and comment shall not be incorporated by reference."

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29. *Adoption.*

40 CFR 1506.3 states:

"(a) An agency may adopt a Federal draft or final environmental impact statement or portion thereof provided that the statement or portion thereof meets the standards for an adequate statement under these regulations.

"(b) If the actions covered by the original environmental impact statement and the proposed action are substantially the same, the agency adopting another agency's statement is not required to recirculate it except as a final statement. Otherwise the adopting agency shall treat the statement as a draft and recirculate it (except as provided in paragraph (c) of this section).

"(c) A cooperating agency may adopt without recirculating the environmental impact statement of a lead agency when, after an independent review of the statement, the cooperating agency concludes that its comments and suggestions have been satisfied.

"(d) When an agency adopts a statement which is not final within the agency that prepared it, or when the action it assesses is the subject of a referral under part 1504, or when the statement's adequacy is the subject of a judicial action which is not final, the agency shall so specify."

PART 51 LICENSING AND REGULATORY POLICY AND PROCEDURES FOR ENVIRONMENTAL PROTECTION

PROPOSED RULE MAKING

44 FR 61372
Published 10/25/79
Comment period expires 11/26/79

Storage and Disposal of Nuclear Waste

See Part 50 Proposed Rule making.

45 FR 24168
Published 4/9/80
Comment period expires 6/9/80

10 CFR Part 51

Licensing and Regulatory Policy and Procedures for Environmental Protection; Alternative Site Reviews

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission is proposing to amend its regulation in 10 CFR Part 51 to provide procedures and performance criteria for the review of alternative sites for nuclear power plants under the National Environmental Policy Act of 1969 (NEPA). The proposed rule provides for (a) information requirements for applying for an alternative site review by the Commission, (b) timing of Commission review, (c) region of interest to be considered in selecting sites, (d) criteria for the selection of sites, (e) criteria for comparing a proposed site with alternative sites, and (f) requirements for reopening an alternative site decision. It is also proposed that minor amendments be made to 10 CFR Part 2 and 10 CFR Part 50 to reflect the provisions of the proposed rule. Public comment is requested on the proposed rule, on whether safety matters including emergency response capability should be admitted as issues in alternative site reviews, and on the value/impact statement supporting the proposed rule.

DATES: Comments are due on or before June 9, 1980.

ADDRESSES: Interested persons are invited to submit written comments and suggestions to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Single copies of the value/impact statement may be obtained on request from the Director, Division of Technical Information and Document Control. Copies of the value/impact statement may be examined in the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Dr. Jerry R. Kline, Environmental Engineering Branch, Office of Nuclear

Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (301) 492–8251.

SUPPLEMENTARY INFORMATION:

I. Foreword.

NEPA and NRC's environmental regulations in 10 CFR Part 51 have many provisions that shape the NRC's environmental reviews for nuclear power plants, but the basic underlying aspect is the consideration of alternatives. There are four distinct and different areas of NRC decisionmaking that involve alternatives, as described below:

1. One decision that must be made is whether additional baseload generating capacity need be provided. In other words, NRC considered the "no action" alternative, which includes consideration of conservation of energy.

2. A second decision that must be made by the NRC is whether nuclear fueled generation is an acceptable choice or whether other types of energy sources, e.g., coal, are superior.

3. A third NRC decision is whether the proposed site is acceptable. This particular decision involves the consideration of alternative sites; consideration of reasonable major mitigation measures that might be employed to make environmental impact acceptable at the candidate sites, such as the type of cooling system that should be employed at a particular site; and consideration of the costs of such major mitigation measures, as well as any major costs that might be required to make the site acceptable from a safety standpoint.

4. A fourth type of decision that is made involves whether other types of mitigation measures are warranted that normally would be of little importance to site selection, but may still be important from the standpoint of minimizing, to the extent reasonable, any residual adverse environmental impact that likely might be incurred during the construction or operation of the plant.

The proposed rulemaking focuses on the third type of NRC's environmental decisions—i.e., the question of alternative sites.

The NRC has considered the question of alternative sites in all of its NEPA reviews of applications to construct and operate nuclear power plants. As in most situations, however, the type and nature of the review has evolved over the years. Until recently, the NRC's review of the alternative site question has focused primarily on the qualities of the proposed site; i.e., a review that focuses on the "products" of an applicant's site selection process. The NRC typically did not initiate an extensive review of the applicant's site selection process and alternative site unless substantial inferior qualities were identified at the applicant's proposed site. However, the NRC has recently and dramatically expanded its review of the applicant's site selection process and procedures, as well as its review of the scope and depth of the detailed investigation of alternative sites.

The NRC believes that the experience gained in past and recent reviews of nuclear power plant sites should permit codification of the lessons learned into an intelligible, intelligent, and environmentally sensitive rule that governs the NRC review of alternative sites. While it is true that many of the issues that would be addressed by a rule on alternative site reviews could also be addressed more informally by issuance of regulatory guides and standard review plans and litigated in individual cases, some issues, particularly issues relating to notice and timing of public participation, can only be adequately addressed by rule. In addition, a comprehensive rule addressing review of alternative sites will promote public understanding of and participation in the NRC review of alternative sites. The proposed rule would:

1. Provide for more effective public participation by implementing procedural changes that: (a) require early notification of the public of an applicant's choice of a proposed site and its alternatives; (b) permit an early review of the alternative site question apart from other early site review issues; and (c) provide explicitly for consideration of candidate sites proposed by other parties that meet certain criteria and are proposed in a timely fashion.

2. Provide for greater predictability in the licensing process by (a) prescribing criteria for determining when a region of interest of sufficient size has been considered; (b) prescribing criteria for judging whether candidate sites are among the best that could reasonably be found; (c) prescribing the basic standards for comparing the proposed site to the alternative cites; and (d) providing criteria for reopening the alternative site question after a previous NRC decision has been rendered on this subject.

The basic forces motivating the development of the proposed rulemaking are:

1. The necessity to protect the environment from unduly adverse environmental impacts, recognizing that the siting of a large, nuclear generating facility will result in some adverse impact regardless of where it is sited. Unduly adverse environmental impacts are an undesirable cost to society.

2. The realization that (a) reasonable bounds may be placed on the search for alternative sites without compromising environmental protection, and (b) the NRC's informational needs require the applicant to make a significant commitment of resources at the proposed site. As a general matter these costs are ultimately borne by the ratepayer and the taxpayer.

3. The fact that it is in the public interest to attempt to develop written, understandable NRC review and decisional criteria that provide for the necessary protection of important environmental qualities; i.e., criteria that are sensitive to the factors that would significantly and adversely impact the environment, yet still reasonably bound the consideration of alternatives to permit a rational and timely decision about the sufficiency of analysis.

Considering the above points, it should be noted that the proposed rule is environmentally based, but it does provide for other considerations (such as cost) to bound in a reasonable manner the search for candidate sites. The NRC fully realizes that an applicant does consider other factors in its site selection process. These factors are important to the applicant because they affect the economics and technical merits of the project and because many of these parameters affect reactor safety and thus must be reviewed and found acceptable by the NRC during the safety review process. The NRC sees no basic incompatibility between the environmentally-based rule proposed here and the fact that the applicant must realistically consider other, equally important, parameters in its formulation of a reasonable and effective site selection process. Also, it should be noted that the proposed rule (Section VI.2.b.(7)) includes threshold population criteria that are the same as the numerical values for population density contained in Regulatory Guide 4.7, "General Site Suitability Criteria for Nuclear Power Stations." This is reflective of past staff practice. However, these criteria may be changed in accordance with an ongoing Commission review of siting policy which will be the subject of an advance notice of rulemaking in the immediate future.

To assist in the Commission's consideration of this question on population and related questions and as part of this proposed rulemaking on alternative sites, public comment is requested at this time on whether safety issues, including emergency response capability, should be admitted in the review and decisionmaking on alternative sites; and if so, how. At least two alternatives exist with regard to this question:

1. Establish, in a public rulemaking, exclusionary safety standards that must be met in order to have an acceptable site. Safety issues would not be considered in subsequent review of alternative sites, since such standards would be set sufficiently conservative that the residual radiological risk to the environment would be small and would be sufficiently similar to the residual risk at other reasonable sites in the region that an obviously superior alternative would likely not exist; i.e., these differences in residual radiological impacts would not weigh heavily in a NEPA-type cost-benefit balance. Such acceptance standards might include, for example, reasonable limits on population density, distances to towns and cities, distances to airports and other manmade hazards, and distances to capable faults.

2. Establish, in a public rulemaking, exclusionary safety standards that must be met, but also provide for inclusion of those safety issues in the consideration of alternative sites even when the sites meet these criteria. Such criteria may or may not be the same numerically as those addressed in 1 above. The rationale of this alternative rests on the view that even when a safety-related characteristic (e.g., population density) does not render a site unacceptable in any absolute sense, it may nevertheless involve sufficient residual risk to justify attempts to do better. The alternative sites evaluation process is suited to a determination of how well one can reasonably do in the particular area under consideration, since the process would illuminate specific alternatives. As an option, a second set of more conservative criteria might also be established which, if met, would not require that safety issue to be included in the consideration of alternative sites.

With respect to population density, alternative 1 above would seek to obtain a similar result as alternative 2, i.e., acceptance thresholds, set in light of population density and distribution.

The NRC realizes that implementation will not, and should not, remove the controversy over the question of alternative sites. The question rightfully is a controversial one that elicits high public interest. The purpose of the rule is not to eliminate this controversy, but to focus it on factors of critical importance to the protection of the environment.

II. Background

NEPA requires the study and development of alternatives to any major Federal action that would significantly affect the quality of the human environment. The procedure for doing this must be an integral part of the planning and decisionmaking processes of Federal agencies. 10 CFR Part 51 establishes the NRC's licensing and regulatory policy and procedures under NEPA and requires that each applicant for a permit to construct a nuclear power plant discuss in an Environmental Report "Appropriate Alternatives" to the proposed facility. Among the primary alternatives to be considered, once the need for a nuclear facility has been established, are alternative sites for the facility.

The assessment of alternative sites for proposed nuclear power plants is a complex and difficult task, for the applicant, the NRC staff, and all parties in the process. Issues related to alternative siting have been a major source of controversy in a number of cases involving construction permits for nuclear power plants. The NRC has observed that there are some recurring issues at the heart of the controversy. The Commission believes that these recurring issues can and should be resolved on a generic basis.

An NRC study group seeking to identify ways to improve the effectiveness of NRC nuclear power plant licensing procedures recommended in June 1977 (see NUREG–0292, "Nuclear Power Plant Licensing: Opportunities for Improvement") that, among other measures, rulemaking should be considered for the generic resolution of certain issues presently litigated in individual licensing proceedings. An interim policy statement on generic rulemaking was published in the Federal Register on December 14, 1978, with a 90-day period for public comment ending on March 12, 1979. Additional technical detail on the ten issues identified by the staff for possible rulemaking was provided in NUREG–0490, "Preliminary Statement on General Policy for Rulemaking to Improve Nuclear Power Plant Licensing."

One of the ten issues proposed by the staff for consideration in generic rulemaking was alternative siting methodology and information requirements. Recognizing the need for further clarification of this issue, the staff issued Supplement No. 1 to NUREG–0490, a staff report entitled "General Considerations and Issues of Significance on the Evaluation of Alternative Sites for Nuclear Generating Stations Under NEPA." The major purpose of the report was to provide additional information to members of the public, industry, and other governmental agencies who intended to comment by March 12, 1979, on issues of alternative siting.

In addition, the NRC conducted a workshop to actively seek out comments on the alternative sites issue. This workshop provided invited representatives from industry, State and Federal government, public interest groups, and others the opportunity to scrutinize and comment on the NRC staff's most recent thinking on the issue of alternative sites.

Comments and feedback received from the workshop participants and observers, and those received from the public review of Supplement 1 to NUREG–0490, have been considered in the development of the proposed rule on alternative sites.

This proposed rule sets forth the resultant NRC policy regarding the evaluation of alternative sites for nuclear power plants under NEPA. The proposed rule is intended to (1) fulfill the NEPA objectives of ensuring that environmental factors have been fully considered in NRC decisionmaking; (2) reduce uncertainty and delay in the decisionmaking process; (3) reduce Federal paperwork in NEPA statements; and (4) limit alternative site review to relevant and material issues. The basic objective of this rule is to provide for a meaningful, rationale, understandable, and stable NRC review and decisionmaking process that will both reasonably protect environmental values and yield a timely decision.

The intent of this proposed rule is to establish procedural and performance criteria for the identification and evaluation of alternative sites for nuclear power plants. Controversy with regard to the issue of alternative sites will not and should not be eliminated. This proposed rule will, however, focus the controversy on whether criteria important to environmental protection have indeed been met.

The NRC has considered the values and impacts of rulemaking and of alternative actions. These considerations have been put forth by

the Commission's staff in a value/impact statement.

III. The Role of NRC and Others in the Considerations of Alternative Sites

The NRC has the statutory responsibility to review applications for the construction and operation of nuclear power plants. It must assure the accuracy and relevance of environmental information, perform the environmental analyses, and make the decision to accept or reject a site. In carrying out its responsibilities, the NRC does not select sites or participate with the applicant in selecting a proposed site. However, the NRC is the lead Federal agency under NEPA for carrying out the NEPA mandate that alternative sites be considered in connection with nuclear power plant licensing.

The NRC may give appropriate deference to other Federal agency expertise in the assessment of certain impact, e.g., U.S. Environmental Protection Agency expertise in evaluating aquatic impacts. The Commission has also stated that "the fact that competent and responsible State authority has approved the environmental acceptability of a site or project after extensive and thorough environmentally sensitive hearings is properly entitled to 'substantial weight' in the conduct of our own NEPA analysis." Public Service Company of New Hampshire, et al. (Seabrook Station, Units 1 & 2), 5 NRC 503 at 527 (1977). Additionally, consideration is given to other information developed by State, regional, and local agencies (such as land or water use plans).

The proposed rulemaking represents no change in the above stated present practice.

IV. The Proposed Rule

A rule must address those elements of the alternative siting process that are generic in nature and likely to recur in all or many of the cases likely to be encountered. In formulating the proposed rule, the staff identified six major issues associated with alternative site consideration. These are (1) information requirements, (2) timing, (3) region of interest, (4) selection of candidate sites, (5) comparison of the proposed site with the alternative sites, and (6) reopening of the alternative sites decision.

The following sections provide a statement of each element of the proposed rule, describe its relation to present practice, and discuss the need for the rule and rationale for each element of the rule. The elements of the rule are organized to reflect the logic and chronology of a normal NRC review of alternative sites in response to an actual submittal for such a review.

A. Information Requirements

A-1. Notice of Intent

1. *Statement of Rule.* An applicant is to provide the NRC staff with a notice of intent to tender an application for a construction permit (CP) for a nuclear power plant either at least three months before tendering of a CP application requesting an early review of the alternative sites issue (pursuant to § 2.101 and subpart F of 10 CFR Part 2) or 3 months prior to beginning the detailed studies on the proposed site, whichever comes first. The notice of intent will identify the location, cooling water sources, and physiographic unit of the proposed and alternative sites, as well as describe the anticipated generating capacity, the number of generating units, and the types of condenser cooling systems that would be used.

2. *Relationship to Present Practice.* Present NRC rules do not require submittal of such a notice, and present practice does not yield the information on cooling systems or alternative sites at the times specified.

3. *Need for Action.* Early public notification is needed to allow the public to become aware of the project, to identify their concerns and to express those concerns in advance of significant financial commitments by the applicant and at a time when due consideration of their concerns would not result in unacceptable schedule delays.

4. *Rationale and Discussion.* After receiving a notice of intent as required by the rule, NRC would publish the information received in the **Federal Register** and in newspapers local to the sites identified. This would assure that potential public participants have sufficient time prior to the NRC review to prepare meaningful information to be considered early in the licensing process. This provision is in direct response to a recommendation from several workshop participants.

For situations where, on the effective date of this rule, a future applicant has already begun or is about to begin detailed, long-term investigations on a site likely to be proposed subsequently to the NRC as a site for a nuclear power plant, such a future applicant must provide a notice of intent within three months following the effective date of this rule.

A.2. Reconnaissance Level Information

1. *Statement of Rule.* Reconnaissance level information, i.e., information or analyses that can be retrieved or generated without the performance of new, comprehensive site-specific investigations, is normally adequate as a basis for identifying candidate sites and for selecting a proposed site.

Analysis of the slate of candidate sites may address other aspects of siting that are important to the applicant's decision, but must address the following subjects that are important to the NEPA reviews: hydrology, water quality and availability, aquatic and terrestrial biological resources, land use, transmission requirements, socioeconomics, population distribution and density, facility costs, institutional constraints, and public concerns where such have been provided to the applicant or NRC in writing.

2. *Relationship to Present Practice.* Present practice is that the analysis of alternative sites is normally based upon readily available, reconnaissance level information such as provided by scientific literature, reports of government and private research agencies, consultation with experts, and brief field investigations. The scope of depth of the data and analysis required are matched to the importance of possible impacts and the degree of certainty regarding their magnitude. In some cases, detailed investigations related to specific issues may be required.

While detailed site-specific baseline studies on the proposed site are required to support the remainder of the NRC's environmental review, these data normally add little to NRC's determinations regarding alternative sites. These detailed studies principally serve as a basis for decision-making regarding mitigative measures to reduce (on a practicable basis) any residual adverse environmental impacts. However, they also serve a secondary purpose in that they confirm judgments on likely adverse environmental impacts that are made using reconnaissance level data. On occasion these studies may not confirm such judgments, but may lead to a finding that the proposed site is unacceptable.

The proposed rule on reconnaissance level information represents no change in the above stated practice.

3. *Need for Action.* Present practice is sufficiently well established through licensing experience to permit rulemaking on information requirements for alternative site analysis.

4. *Rationale and Discussion.* The rationale for the rule on reconnaissance level information proceeds from the premise that major adverse environmental impacts can normally be identified using this type of information. Therefore, the added costs of requiring

detailed site-specific investigations and analyses on all candidate sites normally would not be justified with respect to any marginal improvement in environmental protection. There was substantial discussion during the workshop on the applicability of reconnaissance level information to alternative site analyses. Many workshop participants emphasized that the term "reconnaissance level information" should not be interpreted to mean the reliance on limited data and subsequent superficial analyses. Such an interpretation is not intended, thus the proposed rule has been drafted to ensure that this misinterpretation will not occur.

B. Timing

1. *Statement of Rule.* Under the proposed rule an applicant may submit the proposed and alternative sites for NRC evaluation as part of a full construction permit review either early and separate from the review of plant design (an early site review) or in conjunction with the review of plant design. An early site review (ESR) of alternative sites may be in conjunction with or separate from consideration of other ESR issues. The applicant may later submit other siting issues for an early site review during the effective period of the early alternative sites partial decision.

2. *Relationship to Present Practice.* In the past, the NRC's review of alternative sites has generally occurred concurrently with the review of all other environmental issues and at the same time as the CP safety review of facility design. However, NRC regulations do provide for a single optional early site review, which may include any issues involving environmental impact or site safety that the applicant desires to address at a proposed site. While the applicant must describe the site selection process in an early site review, the review of specific alternative sites need not be addressed unless it is believed by the NRC that the consideration of other issues could prejudice the full consideration of alternative sites at a later time.

The proposed rule on timing represents a change in the above stated practice in that early review of the full question of alternative sites would be permitted in advance of the other early site review issues, and a subsequent early review would be allowed to consider the detailed baseline studies at the proposed site.

3. *Need for Action.* The option for early review of alternative sites is needed to permit a full consideration before the applicant commits substantial resources to the proposed site. If a favorable decision is made on the alternative site question, the applicant could then commit the funds necessary to perform early site-specific studies of environmental and safety matters with a greater degree of confidence that the proposed site will not subsequently be rejected in favor of an alternative.

4. *Rationale and Discussion.* A two-stage early site review process is permitted to provide incentive for an early review of the alternative site question. In this way an early decision could be arrived at on alternative sites, after which the applicant could expend the necessary resources for detailed site-specific studies and apply at a later date for the remainder of a full early site review. Thus, less of the applicant's resources would be placed at risk prior to an NRC decision on alternative sites, and yet the applicant and the public would ultimately be able to achieve all of the ultimate benefits of an early site review.

All reviews and decisions would still be performed within the effective period for the early site review decision. All that would be added would be the opportunity to receive a regulatory decision on the question of alternative sites shortly after the applicant has decided upon the proposed site, but prior to the commitment of substantial funds at that proposed site.

C. Region of Interest

1. *Statement of Rule.* The initial geographic area for determining the region of interest for NRC regulatory review purposes may be either the State in which the proposed site is located or the service areas of the applicant. The actual region of interest must be larger in accordance with Section V.3 of the rule, or may be smaller in accordance with Section V.2 of the rule, depending on the environmental diversity, institutional factors, and cost considerations set forth in those sections.

For the purpose of determining the region of interest, environmental diversity refers to the types of water bodies available within the region (upper or lower reaches of large rivers, small rivers, lakes, bays, and oceans) and the associated physiographic units.

2. *Relationship to Present Practice.* Past practice has normally been to accept the applicant's proposed region of interest which commonly is the applicant's service areas. However, the region of interest has been smaller in some situations, and in other situations an expansion of the proposed region of interest has been required. This rule preserves that practice, but it adds specific criteria for expansion or contraction of the initial geographic area in determining the region of interest.

3. *Need for Action.* The basic forces motivating the development of this rule are:

a. The necessity to protect the environment from unduly adverse environmental impacts by providing an adequate choice of candidate sites representing reasonable environmental alternatives, and

b. The realization that reasonable bounds may be placed on the search for alternative sites without compromising environmental protection.

4. *Rationale and Discussion.* The use of service areas coupled with performance criteria for expansion or contraction is judged to be sufficient to provide a substantial range of environmental alternatives from which to choose in making the final siting decision. Unlimited expansion of the areas to be searched likely would not yield significant additional new alternatives for limiting of environmental impacts that would already be present in a reasonably bounded area. As a practical matter, utilities may initiate their searches within their service areas. In many cases this will lead to the identification of the required diversity of resources. Where service areas are small, the requirement could cause an expansion that would extend the region of interest beyond the service area boundaries. However, in very large service areas, the required diversity might be found without exploring the entire service area.

The requirements may impose a need for large regions of interest in water limited areas, particularly in the western regions of the nation. The rule is intended to ensure in all cases that all reasonable alternatives have been considered. The analysis of remote alternatives need be carried only as far as necessary to demonstrate the reasons (which include costs) for not considering them further.

The rule is intended to apply to utilities having well defined service areas as well as those that do not. In situations where the State is asking the review of the alternative sites issue or where the service areas of the applicant are not defined, the State in which the proposed site is located would be the starting point for determining the region of interest.

When considering water sources that would provide adequate water availability, the staff intends that the characteristics of the terrestrial watershed (i.e., the physiographic characteristics) also be included and

considered. Under this concept, a river having adequate water for a nuclear power plant but that flows through a dedicated terrestrial area such as a national park or national forest might not qualify as an acceptable resource. It is permissible, however, to designate portions of a watershed for possible siting while excluding other portions of the same watershed.

Different portions of a watershed or coastal zone may be considered to be different physiographic units, if the environmental impacts of siting in these areas would be clearly different from one another. For example, the "head waters" region of a river watershed would be designated as a physiographic unit separate from the estuarine region of the same watershed, since the impacts on fisheries and other aspects of the environment would be clearly different in the two areas. The rule is not intended to compel the consideration of water bodies that are in similar physiographic settings, since that would not add significantly to the range of environmental choice.

In emphasizing the terrestrial components the staff intends that the search for sites should not be confined to land areas immediately adjacent to water bodies but should be expanded to include a reasonable corridor of search around the water body. Siting up to several miles from a suitable water body may be desirable to avoid land use conflicts that are often found adjacent to water bodies.

The workshop participants unanimously supported the concepts of (1) environmental diversity as a determinant in bounding the region of interest, and (2) water being the principal regional determinant of environmental diversity.

D. Selection of Candidate Sites

1. *Statement of Rule.* An applicant may submit a slate of candidate sites based on either (1) a demonstration (according to criteria for site selection procedures set forth in the rule) that the site selection methodology is a reasonable, environmentally sensitive site screening process that provides a diligent search for sites that are among the best that could reasonably be found, or (2) a demonstration that the slate of candidate sites meets the prescribed environmentally sensitive threshold criteria (set forth in the rule) and are therefore among the best that could reasonably be found. The rule states that a slate of candidate sites should contain at least four sites. The rule also provides criteria for acceptance of candidate sites proposed by any party to the proceeding.

2. *Relationship to Present Practice.* Present practice is to make a determination that candidate sites identified by the applicant are "among the best that reasonably could have been found." Until recently, the NRC's review has focused primarily on the qualities of the proposed site (a product-oriented review). However, recently the NRC has expanded its review and the staff presently reviews the demonstration of this "among the best" standard by focusing on the adequacy of the applicant's site selection procedure (a process-oriented review). The rule preserves the advantages of both the process-oriented and product-oriented approaches. The rule adds criteria for implementing an adequate site selection process demonstration and evaluation, and provides the option for a product-oriented review by specifying threshold criteria for evaluating the slate of candidate sites. Most of the workshop participants believed that the applicants should be given the option to seek either a process-oriented or a product-oriented review of the slate of candidate sites.

3. *Need for Action.* The process-oriented approach codifies the elements that govern NRC reviews of the site selection process and provides guidance for the applicant's management of that site selection process. The product-oriented approach emphasizes the environmental merits of the candidate sites rather than the process that yielded these sites, and will likely be a more environmentally sensitive approach.

4. *Rationale and discussion.* The rationale for codifying the process-oriented approach is to provide guidance to all parties regarding the elements that govern NRC reviews of that process. The general rationale for the product-oriented approach is that candidate sites that pass all of the proposed threshold standards would be unlikely to have substantial, unidentified, adverse environmental impacts. Therefore, the resulting slate of candidate sites likely would be of comparable environmental quality and should be environmentally acceptable to the NRC. While there could be a situation where the proposed site could be marginal with respect to several of the thresholds and thus might be inferior on a cumulative impact basis, it would be unlikely that all the candidate sites would be similarly inferior. Thus the proposed site's inferiority would be clearly displayed in the subsequent detailed comparison with the other candidate sites.

The rule provides that the slate of candidates sites should contain at least four sites. The reason for this is to ensure that even in regions of little diversity, there is some choice among the sites in the slate. For more diverse regions the criteria controlling how many sites would be necessary are oriented towards the diversity of environmental qualities presented, so as to give a meaningful environmental comparison of alternatives. The candidate sites would be required to be reasonably representative of all of the major diverse environmental qualities present in the region of interest, as follows:

a. Major types of water sources.
b. Major physiographic units.
c. Consideration of sites of existing electric generating facilities as well as new sites.

As an example of acceptable diversity, if a new site on a lake in a woodland area was already identified as a candidate site, a woodland site on another lake within the region of interest would not be required, unless that site also hosts an existing electric generating facility.

One of the positions adopted by the public workshop on alternative sites is that public participation in the siting process would be enhanced if parties other than the applicant were permitted to propose additional candidate sites for consideration, but that the criteria proposed for acceptance of such sites should be no more stringent than those which the applicant's sites must meet. Criteria are proposed for the acceptance of such a site that are essentially the same criteria that the applicant's sites must meet in establishing the original slate of candiates.

In addition, the proposed rule imposes time limits for proposing additional candidate sites. The time limits are a key element in achieving a timely evaluation of the alternative sites issue and, except upon a substantial showing of good cause, will not be extended.

E. Comparison of the Proposed Site With Alternative Sites

1. *Statement of Rule.* A proposed site that comes from a slate of candidate sites that are among the best that could reasonably be found will not be rejected by the NRC on the basis of the alternative site review unless a comparison with the alternative sites results in a determination that an obviously superior alternative exists. There will be a two-part, sequential test for obvious superiority. The first stage of the test will be to determine whether there is an environmentally preferred site. The second stage of the test will consider economics, technology, and institutional factors to determine whether any environmentally preferred

site is obviously superior to the proposed site.

2. *Relationship to Present Practice.* Present staff practice does consider the range of factors that would be addressed by the proposed rule.

3. *Need for Action.* This proposed element of the rule will provide a more stable structure for the procedural aspects of how environmental factors should receive consideration and how these factors should be balanced with non-environmental factors to determine obvious superiority.

4. *Rationale and Discussion.* The criteria for testing the proposed site against the alternative sites comes from past practice, as reflected in individual nuclear power plant licensing reviews.

F. Reopening of the Alternative Site Decision

1. *Statement of Rule.* a. A reopening and reconsideration of the alternative site decision after a final limited work authorization or construction permit decision will be permitted only upon a reasonable showing that there exists significant new information that could substantially affect the earlier decision. Any decision to reconsider the alternative sites decision or not in these instances will consider the reasonable costs of delay and of moving to another site compared with the adverse environmental impacts that might be avoided by moving to another site.

b. For cases where the portion of the construction permit application containing facility design is filed three years or more after the effective date of this rule and where an application for an early review of alternative sites was tendered at least two and a half years prior to filing the portion of the CP application containing detailed facility design information, any reconsideration of the alternative site decision will be permitted only upon a reasonable showing that there exists significant new information that could substantially affect the earlier decision, even when allowance is made for reasonable costs of delay and of moving to another site. If such an application was not made at least two and a half years prior to filing such portion of the CP application, costs of delay and of moving to another site will not be considered in any decision to reconsider the alternative site decision or not, or in any resulting decision that there is or is not an obviously superior site.

c. If two sites are reasonably within a region of interest for a nuclear power plant site and both sites have received an affirmative NRC partial decision in an early review of alternative sites, an applicant may choose either site for an application to construct a specific nuclear power plant without reviewing the alternative site question, except on the basis of new information, as provided above.

2. *Relationship to Present Practice.* The proposed rule is generally consistent with present criteria regarding treatment of new information under the early-site-review rule, and would result in consistent criteria for the treatment of new information regarding alternative sites at the construction permit and operating license stages.

The treatment of forward costs associated with moving to another site (including costs of delay) prescribed in this element of the proposed rule would generally codify a practice that has evolved, except that it would preclude the consideration of costs of moving to another site if the applicant did not seek an early resolution of the alternative site question.

3. *Need for Action.* This proposed element of the rule will provide for consistent treatment of new information regarding alternative sites throughout the licensing process.

4. *Rationale and Discussion.* The rationale for this element of the proposed rule is that after a decision has been reached regarding the alternative site question, during either an early site review or a CP review, the applicant (or licensee) will logically begin committing greater resources to that site. While such commitments are clearly at the applicant's risk, it is logical to allow the inclusion of such costs in any subsequent cost-benefit analyses, since such investments would have been made by the applicant in good faith.

Therefore, while it is possible that a reversal of the previous decision could be made based on new information (which is a risk the applicant or licensee must run), any reconsideration of the question of alternative sites and the cost-benefit analysis supporting any reversed decision should normally permit the full accounting of all reasonable forward costs to develop the new site (including costs of delay) compared to the reasonable forward costs of completing the project at the previously approved site.

At some point after issuance of the CP, the alternative of siting the nuclear power plant elsewhere likely will no longer be a reasonable alternative for the purposes of NEPA. That is, there is a point where comparative forward costs and the temporal proximity to the provision of needed (or desirably substitutable) power so favor the partially constructed site that, there likely is no real possibility that the nonsafety-related considerations at an alternative site would be obviously superior to the proposed site. At that point, the reconsideration of alternative sites likely would not be required, unless the proposed site has been judged unsuitable for some safety or environmental reason.

Forward costs also could become substantial after an early site review decision, particularly as the time for a CP decision approaches. This means that a reevaluation of alternative sites after an early site review decision likely would not be justified on the basis of a full cost-benefit analysis unless there is, for example, a determination that the actual use of the site (rating and number of units) would be greater than had been evaluated earlier, or that firm and major changes in land or water use or changes in legal requirements involving the protection of species or resources have occurred since the previous evaluation. It is unlikely that changes in the prediction of environmental impacts would be so great as to warrant a re-review of the alternative sites decision on that basis alone.

The rationale for the third criterion of this portion of the proposed rule is that if two sites in the same general region of interest had been evaluated in separate reviews and neither had been found to have an obviously superior alternative, than it is likely that neither would be obviously superior to the other.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, and section 553 of title 5 of the United States Code, notice is hereby given that adoption of the following amendments to 10 CFR Part 2, 10 CFR Part 50, and 10 CFR Part 51 is comtemplated. All interested persons who desire to submit written comments should send them to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Attention: Docketing and Service Branch, Washington, D.C. 20555 by June 9, 1980. Copies of comments received will be available for public inspection at the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C.

§ 2.603 [Amended]

1. It is proposed that § 2.603(a) be amended by adding at the end thereof the following:

(a) * * * Where an applicant has failed to file the notice of intent required by Appendix A of 10 CFR Part 51, the application shall be docketed in accordance with the provisions of that appendix.

§ 2.605 [Amended]

2. It is proposed that § 2.605(a) be amended by adding at the end thereof the following:

(a) * * * Where an application has been filed pursuant to Appendix A of 10 CFR Part 51 for an early alternative site evaluation separate from other early site review issues, the alternative site evaluation shall not be considered a review for purposes of this one review limitation.

Appendix Q [Amended]

3. It is proposed that the numbered paragraph 1. of Appendix Q of 10 CFR Part 50 be amended by inserting between the first and second sentence thereof the following:

"As a part of an early site review, either in conjunction with or separate from the consideration of other early site review issues, a person may submit a request for a review of the alternative site issue and for issuance of a Staff Site Report concluding that there is no obviously superior alternative to the proposed site. If the person requests an early alternative site review separate from the consideration of other early site review issues, the person may later submit other siting issues for an early site review during the effective period of the Staff Site Report on the alternative site issue, provided that any later early site review of other issues shall remain in effect only so long as the initial Staff Site Report on alternative sites remains effective."

4. It is proposed that the numbered paragraph 3. of Appendix Q of 10 CFR Part 50 be amended by adding at the end thereof the following:

"Where a person has failed to file the notice of intent required by Appendix A of 10 CFR Part 51, the request for review shall be acted upon in accordance with the provisions of that appendix."

5. It is proposed that the numbered paragraph 5 of Appendix Q of 10 CFR Part 50 be amended by deleting the last sentence thereof and substituting the following:

"The conclusions of the Staff Site Report will be reexamined by the staff where five years or more have elapsed between the issuance of the first Staff Site Report and its incorporation by reference in a construction permit application."

6. It is proposed that the first sentence of the numbered paragraph 7. of Appendix Q of 10 CFR Part 50 be amended by adding at the end thereof the following:

"However, if a person, pursuant to Appendix A of 10 CFR Part 51, has submitted a request for an early alternative site review separate from other early site review issues, the alternative site review shall not be considered a review for purposes of this one review limitation."

7. It is proposed that a new Appendix A be added to 10 CFR Part 51 to read as follows:

Appendix A.—Evaluation of Alternative Sites for Nuclear Power Plants

I. Introduction and Scope

This appendix sets forth procedures and performance criteria for the review of alternative sites for nuclear power plants under NEPA. Specifically, this appendix provides for (a) information requirements for applying for an alternative site review by the Commission, (b) timing of Commission review, (c) region of interest to be considered in selecting sites, (d) criteria for the selection of sites, (e) criteria for comparing a proposed site with alternative sites, and (f) requirements for reopening an alternative site decision.

The basic objectives of this appendix are:

1. To provide for more effective public participation by implementing procedural changes that (a) require early notification of the public as to an applicant's choice of a proposed site and its alternatives, (b) permit an early review of the alternative site question apart from other early site review issues, and (c) provide explicitly for consideration of candidate sites proposed by other parties that meet certain criteria and are proposed in a timely fashion; and

2. To provide for greater predictability in the licensing process by codification of present practice that (a) prescribes criteria for determining when a region of interest of sufficient size has been considered, (b) prescribes criteria for judging whether candidate sites are among the best that could reasonably be found, (c) prescribes the basic standards for comparing the proposed site to the alternatives sites, and (d) provides criteria for reopening the alternative site question after a previous NRC decision has been rendered on this subject.

The nuclear power plants referred to in this appendix are those facilities which are subject to § 51.5(a) of this chapter and are of the type specified in § 50.21(b)(2) or (3) or § 50.22 or are testing facilities. The submittal for review and evaluation of alternative sites shall be made in the same manner and in the same number of copies as provided in § 50.30(a), (c)(1), and (c)(3) for license applications.

II. Definitions

As used in this appendix,

1. "Region of interest" means the geographic areas considered in searching for candidate sites.

2. "Candidate sites" means those sites that are within the region of interest and are considered in the comparative evaluation of sites for a nuclear power plant and are judged to be among the best that can reasonably be found for the siting of a nuclear power plant.

3. "Proposed site" means the candidate site submitted to the NRC by the applicant, or a person requesting an early review pursuant to Appendix Q of 10 CFR Part 50, as the proposed location for a nuclear power plant.

4. "Alternative sites" means those candidate sites which are specifically compared to the proposed site to determine whether there is an obviously superior alternative site.

5. "Slate of candidate sites" means the group of candidate sites comprised of the proposed site and all alternative sites.

6. "Environmentally preferred alternative site" means an alternative site for which the environmental impacts are sufficiently less adverse than for the proposed site that environmental preference for the alternative site can be established.

7. "Site" means the geographic area needed for the construction and operation of a nuclear power plant, including the associated transmission corridors to the first intertie.

8. "Reconnaissance level information" means any information or analyses that can be retrieved or generated without the performance of new, comprehensive site-specific investigations. Reconnaissance level information includes relevant scientific literature, reports of government or private research agencies, consultation with experts, short-term field investigations, and analyses performed using such information. The amount of reconnaissance level information and the extent of analyses conducted depend on (1) the importance and magnitude of the potential impact under evaluation and (2) whether the decision is one of identifying a region of interest, identifying candidate sites, or selecting a proposed site.

9. "Partial decision on alternative sites" means a partial decision pursuant to § 2.101 and Subpart F of 10 CFR part 2 that includes a finding that there is or is not an obviously superior alternative to the proposed site.

10. "Applicant" means a person who intends to apply, or who has applied, for a permit to construct a nuclear power plant.

11. "Notice of intent" means a notice that an application will be tendered for a construction permit for a nuclear power plant.

12. "NRC" means the Nuclear Regulatory Commission, the agency established by Title II of the Energy Reorganization Act of 1974, as amended.

13. "NRC staff" means any NRC officer or employee or his/her authorized representative, except a Commissioner, a member of a Commissioner's immediate staff, an Atomic Safety and Licensing Board, an Atomic Safety and Licensing Appeal Board, a presiding officer, or an administrative law judge.

III. Information Requirements

1.a. An applicant shall provide the NRC staff with a notice of intent to tender an application for a construction permit (CP) for a nuclear power plant either at least 3 months before tendering of a CP application requesting an early review (pursuant to § 2.101 and Subpart F of 10 CFR Part 2) of the alternative sites issue or at least 3 months before beginning detailed studies on environmental impact and site safety at the proposed site, whichever occurs earlier. The notice of intent shall identify the location, cooling water sources, and physiographic unit of the proposed and alternative sites, and shall describe the anticipated generating capacity and number and type of generating units for which a CP application will be

tendered, and types of condenser cooling systems that would be used.[1]

Upon receipt of the notice of intent, the NRC will publish the information received in the Federal Register and in the newspapers local to the sites identified.

If an applicant fails to provide a notice of intent within the time specified, the NRC will not docket the tendered application for 3 months where no detailed studies of the proposed site have been performed or for 12 months where such studies have been performed. As soon as practicable after tendering, the NRC will publish the above specified information in the Federal Register and in the newspapers local to the sites identified.

b. A person requesting an early review of the alternative sites issue pursuant to Appendix Q of 10 CFR Part 50 shall provide the NRC staff with a notice of intent to submit such request at least 3 months before submitting the request for review or at least 3 months before beginning detailed studies of the proposed site, whichever occurs earlier. The notice of intent shall identify the location, cooling water sources, and physiographic unit of the proposed and alternative sites, and shall describe the generating capacity, number and type of generating units, and types of condenser cooling systems anticipated or assumed to be used.

Upon receipt of the notice of intent, the NRC will publish the information received in the Federal Register and in the newspapers local to the sites identified.

If the person requesting the review pursuant to Appendix Q to 10 CFR Part 50 fails to provide a notice of intent within the time specified, the NRC will not initiate the review for 3 months where no detailed studies of the proposed site have been performed or for 12 months where such studies have been performed. As soon as practicable after receiving the request for review, the NRC will publish the above specified information in the Federal Register and in newspapers local to the sites identified.

2. Reconnaissance level information shall normally be adequate to identify candidate sites and to select a proposed site in an alternative site analysis. In the identification of candidate sites or selection of the proposed site, the amount of data required and the extent of analyses conducted shall be appropriate to support a reasoned decision.

In some cases, reconnaissance level information may not be sufficient to support the analyses necessary to reach a reasoned decision. In these situations, new comprehensive site-specific investigations must be considered. For example, if substantial questions exist regarding the likely acceptability of a site from a geologic standpoint, substantial geotechnical investigations might be required. Also, if substantial questions exist regarding whether a large adverse impact will occur to an important aquatic species, long-term baseline studies will be considered. The NRC staff will advise the applicant of any additional information requirements as early as practicable.

3. Where a party to a proceeding proposes for consideration (according to Section VI.4.a of this appendix) a candidate site not included in the applicant's slate of candidate sites, it is the responsibility of that party to provide adequate information to support a decision to accept the site or not. If the site is accepted as a candidate site, it is the responsibility of the applicant in the proceeding to provide the information necessary to make the final comparison of that site with the proposed site.

4. Alternative site analyses of both the identification of the slate of candidate sites and the selection of the proposed site shall, at a minimum, address the following subjects:

a. hydrology, water quality, and water availability

b. aquatic biological resources, including endangered species

c. terrestrial resources and land uses, including endangered species

d. transmission corridors (approximate length and general location) and resources affected

e. socioeconomics, including aesthetics, and archeological and historic preservation

f. population distribution and density [2]

g. facility costs

h. institutional constraints, as they affect site availability

i. public concerns in the above subject areas, where such have been provided to the applicant or NRC in writing.

IV. Timing of NRC Review

1. An applicant may submit the proposed and alternative sites for NRC evaluation as part of a full CP review either prior to and separate from the review of plant design (an early site review) or in conjunction with the review of plant design.

2. As part of an early site review, an applicant that tenders an application for an alternative site review and requests a finding that there is not obviously superior alternative to the proposed site may do so either in conjunction with or separate from the consideration of other early site review issues. If the applicant applies for an early alternative site evaluation separate from the consideration of other early site review issues, the applicant may later submit other siting issues for an early site review during the effective period of the early alternative site partial decision, provided that any later early site review of other issues shall remain in effect only so long as the initial early site review of alternative sites remains effective.

V. Region of Interest

1. The initial geographic area for determining the region of interest for NRC regulatory review purposes shall be (a) the State in which the proposed site is located or (b) the service areas of the applicant. The actual region of interest must be larger than the initial geographic area according to 3. below, or may be smaller than the initial geographic area according to 2. below.

2. The region of interest may be smaller than the initial geographic area, if (a) environmental diversity is not substantially reduced and candidate sites within the region of interest meet threshold criteria described in Section VI.2.b. of this appendix, or (b) costs of generating electricity would be exorbitant for sites located in those areas not included, or (c) siting in those areas not included would be in violation of State laws governing nonradiological health and safety aspects of utility siting, or (d) the costs would be exorbitant of developing information to demonstrate whether sites within those areas not included would likely be acceptable from the standpoint of safety.

3. The region of interest must be greater than the initial geographic area if environmental diversity would likely be substantially increased and if (a) candidate sites within the initial geographic area meet the threshold criteria in Section VI.2.b. of this appendix, and the development of sites in the added geographic areas would likely not substantially increase costs, or (b) candidate sites within the initial geographic areas do not meet threshold criteria in Section VI.2.b., and the development of sites in the added geographic areas would not require exorbitant costs.

4. For the purpose of determining the region of interest, environmental diversity refers to the types of water bodies available within the region (upper or lower reaches of large rivers, small rivers, lakes, bays, and oceans) and the associated physiographic units. A substantial increase or decrease in diversity would occur whether the region of interest includes or excludes such a water body. In areas of critical water supply, ground water and waste water are also appropriate water sources for diversity considerations.

VI. Selection of Candidate Sites

1. The candidate sites used in the subsequent site-specific comparison of alternatives must be one of the following:

a. Be identified through the use of a site selection methodology that (1) includes an environmentally sensitive site screening process (i.e., considers the same environmental parameters that are addressed by the criteria in VI.2.b., although not necessarily in the same way) resulting in a slate of candidate sites that are among the best that could reasonably be found and (2) meets the criteria presented in VI.3. below; or

b. Meet the criteria presented in VI.2. below, in which case there shall be no further review of the site selection process.

2. a. A sufficient number of candidate sites, which should include at least four sites, shall be selected from the region of interest to provide reasonable representation of the diversity of land and water resources within the region of interest. One or more of these sites should be associated with each type of water source and physiographic unit reasonably available within the defined region of interest, and one alternative site must have the same water source as the proposed site.

[1] For situations where, on the effective date of this rule, a future applicant has already begun or is about to begin detailed, long-term investigations on a site likely to be proposed subsequently to the NRC as a site for a nuclear power plant, such a future applicant must provide a notice of intent within three months following the effective date of this rule.

[2] This requirement will be modified as appropriate to conform to revisions to 10 CFR Part 100.

b. Except as noted in 2.c.(1), a site must meet the following criteria to be accepted as a candidate site without further review of the site selection process. (Technically appropriate and economically reasonable cooling system mitigative measures may be assumed for each candidate site.)

(1) Consumptive use of water would not cause significant adverse effects on other water users.

(2) There would not likely be any further endangerment of a State or Federally listed threatened or endangered plant or animal species.

(3) There would not likely be any significant impacts to spawning grounds or nursery areas of significance in the maintenance of populations of important aquatic species.

(4) Discharges of effluents into waterways would likely be in accordance with State or Federal regulations (e.g., avoidance of discharges to waters of the highest State quality designation) and would not likely adversely affect efforts of State or Federal agencies to implement water quality objectives (e.g., additional discharges to waters of currently unacceptable quality as determined by a State).

(5) There would be no preemption or likely adverse impacts on land uses specially designated for environmental or recreational purposes such as parks, wildlife preserves, State and National forests, wilderness areas, flood plains, Wild and Scenic rivers, or areas on the National Register of Historic Places.

(6) There would not likely be any significant impact on terrestrial and aquatic ecosystems, including wetlands, which are unique to the resource area.

(7) The population density, including weighted transient population, projected at the time of initial operation of a nuclear power plant, would not exceed 500 persons per square mile averaged over any radial distance out to 30 miles from the site (cumulative population at a distance divided by the area at that distance), and the projected population density over the lifetime of the nuclear power plant would not exceed 1,000 persons per square mile (similarly weighted and measured).[3]

(8) The site is not in an area where additional safety considerations (geology; seismology; hydrology; meteorology; and industrial, military, and transportation facilities) or environmental considerations for one site compared to other reasonable sites within the region of interest would result in the reasonable likelihood of having to expend substantial additional sums of money (cumulative expenditures in excess of about 5% of total project capital costs) to make the project licensable from a safety standpoint or to mitigate unduly adverse environmental impacts.

c. (1) If a site does not meet one or more of the threshold criteria provided in VI.2.b., the site may be acceptable as a candidate if it can be reasonably shown that further examination of that particular type of water source and physiographic unit would not likely identify a site that would meet those same threshold criteria.

(2) If any candidate site does not meet one or more of the threshold criteria provided in VI.2.b. to such an extent that serious adverse environmental impacts would result from its use, that site should be rejected as a candidate site.

3. If the approach of VI.1.a. above is relied upon, demonstration must be made that the site selection process incorporated the following criteria:

a. The overall objectives of the siting study and all initial constraints and limitations (including the geographic area, i.e., region of interest, which is the subject of the study) shall be explicitly stated giving the basis and rationale for all choices.

b. The proposed ways of meeting the stated objectives shall be described, including the general approach to the site selection process.

c. The study shall explicitly state factors (e.g., aquatic biology) under consideration, parameters (e.g., spawning grounds and nursery areas) by which these factors were measured, and criteria (e.g., no significant impact) that define levels of achievement.

d. The site selection study shall be interdisciplinary and shall include natural, social, and environmental sciences. The range of the responsibilities of the study team shall be clearly defined and the methods employed in resolving differences within the group or of arriving at the consensus shall be explicitly stated.

e. The process that led to the identification of candidate sites including all specific methodologies shall be explicitly stated in detail.

(1) Where preemptive screening is used, all limiting or exclusionary criteria employed shall be explicitly stated, the bases for each criterion given, and the ways in which they are applied explained.

(2) Where comparative analysis is used, all methodologies used involving importance factors, preference functions, utility functions, weighting factors, ranking scales, scoring schemes, and rating systems shall be explicitly described; the basis for the selection of each methodology given; and the ways in which each is applied explained.

f. The study shall contain detailed description of administrative means used to support the site selection study, including any quality assurance program commensurate with the objectives of the study and a data management system for handling technical files, maps, and other information.

g. Definitions of terms used in the study shall be included.

4. Any intervening party and the NRC staff may propose one or more additional sites for consideration as candidate sites provided that the following conditions are met:

a. The additional sites are proposed for review within 30 days after the first special prehearing conference (i.e., the conference held pursuant to § 2.751a of 10 CFR Part 2.).

b. The proposal contains a reasonable showing that the additional sites are comparable to the applicant's slate of candidate sites in their ability to meet the criteria specified in VI.2.b. and VI.2.c. and would add to the diversity which is exhibited by the applicant's slate of candidate sites; or where the applicant's candidate sites do not meet all the criteria specified in VI.2.b. and VI.2.c., the proposal contains a reasonable showing that the additional sites will meet these criteria.

c. Where a party identifies more than one additional site, each additional site must meet one of the tests specified in VI.4.b. above.

d. The additional sites have no physical features that would likely create substantial increases in the cost of constructing and operating nuclear power plants at the additional sites compared with the applicant's proposed site, unless there is a reasonable showing that the additional sites meet a criterion specified in VI.2.b. that is not met by the applicant's proposed site.

e. Multiple parties to NRC proceedings should consult with one another prior to proposing additional sites for consideration as candidate sites in order to reasonably limit the total number submitted.

5. A presiding Atomic Safety and Licensing Board (ASLB) may on its own initiative proposed one or more additional sites for consideration as candidate sites up to 30 days after the issuance of the Draft Environmental Statement (DES). On or after the issuance of the DES, additional sites may be introduced by the ASLB, only after a balancing of the cost of delaying the proceeding against the likelihood that utilization of the additional site would avoid significant environmental harm.

6. The 30-day time limits in VI.4.a. and VI.5. above shall not be extended except upon a substantial showing of good cause

VII. Comparison of Proposed Site With Alternative Sites

1. After it is determined by either of the above approaches that the proposed site comes from a slate of candidate sites that are among the best that could reasonably be found, the NRC will not reject the proposed site solely based on its review of the alternative sites unless a comparision with the remaining candidate sites results in a determination that an obviously superior alternative exists. The NRC will determine obvious superiority among the candidate sites by a sequential two-part analytical test. The first part gives primary consideration to hydrology, water quality, aquatic biological resources, terrestrial resouces, water and land use, socioeconomics, and population [4] to determine whether any alternative sites are environmentally preferred to the proposed site. The second part overlays consideration of project economics, technology, and institutional factors to determine whether, if such a environmentally preferred site exists, such a site is, in fact, an obviously superior site.[5] The following factors are considered in this second part of the test:

[3] This requirement will be modified as appropriate to conform to revisions to 10 CFR Part 100.

[4] This requirement will be modified as appropriate to conform to revisions to 10 CFR Part 100.

[5] In applying both parts of the test, the NRC will give consideration to the inherent uncertainties of cost-benefit analysis techniques and, where applicable, to the disparity in the data base between the proposed and alternative sites.

a. The environmental and safety [6] considerations in terms of technology and costs of construction and operation of nuclear power plants at the sites.

b. The forward costs[7] at the proposed site compared to the alternative sites.

c. Other considerations, such as possible institutional barriers. The applicant's proposed site will be rejected solely based on NRC review of alternative sites only when the NRC determines that, considering both parts of the test, there is an environmentally preferable alternative which also is obviously superior, i.e., the NRC is confident that the applicant's proposed site should be rejected.

2.a. If an obviously superior alternative site is identified and the proposed site is rejected by the NRC, and if the applicant submits a new application naming the identified obviously superior site as the newly proposed site, the NRC will not require review of the alternative site question for the newly proposed site, provided that the previous slate of candidate sites had been determined to be acceptable by the criteria established in this rule.

b. If more than one obviously superior alternative site is identified and the proposed site is rejected by the NRC, the applicant may request that a further finding be made in that proceeding to determine whether one of those sites is obviously superior to the others. If that finding is made and one of those sites is obviously superior to the others and the applicant submits the obviously superior site as the new proposed site, the NRC will not require review of the alternative sites question for the newly proposed site, provided that the previous slate of candidate sites had been determined to be acceptable by the criteria established in this rule. If that finding is made and none of those sites is obviously superior to the others, the applicant may propose any of the obviously superior alternative sites for review as permitted according to 2.a. above.

c. If one or more obviously superior sites are identified and the proposed site is rejected by the NRC, the applicant may submit a new proposed site that is comparable to the obviously superior sites in its ability to meet the criteria specified in Section VI.2.b. Where a new site is proposed, appropriate public notice of intent is provided, and a showing of comparability in meeting the criteria is made, the NRC will only require that the sequential two-part analytical test for obvious superiority be performed on the new proposed site and on the sites found obviously superior in the earlier proceeding.

VIII. Reopening of the Alternative Site Decision

1. A reopening and reconsideration of the alternative site decision after a final limited work authorization or construction permit decision will be permitted only upon a reasonable showing that there exists significant new information that could substantially affect the earlier decision. Any decision to reconsider the alternative site decision or not in these instances will take into account preliminary estimates of the reasonable costs of delay and of moving to another site compared with the adverse environmental impacts that might be avoided by moving to another site.

2. For cases where the portion of the construction permit containing facility design is filed three years or more after the effective date of this rule and where an applicant submits the proposed and alternative sites for NRC evaluation as part of a full construction permit review at least 2½ years prior to filing the portion of the construction permit application containing detailed plant design, any reconsideration of the alternative site decision will be permitted only upon a reasonable showing that there exists significant new information that could substantially affect the earlier decision, as described in VIII.1. above. If the proposed and alternative sites were not submitted for NRC evaluation as part of a full construction permit review at least 2½ years prior to filing the portion of the construction permit application containing the plant design, costs of delay and of moving to another site will not be considered in any decision to reconsider the alternative site decision or not or in any resulting decision that there is or is not an obviously superior site.

3. If two sites are reasonably within a region of interest for a nuclear power plant site and both sites have received an affirmative NRC partial decision on an early review of alternative sites, an applicant may choose either site for an application to construct a specific nuclear power plant without reviewing the alternative site question, except on the basis of new information as provided in VIII.2. above.

[6] There are some site safety issues for which a cost-effective means for successful mitigation is not state-of-the-art engineering. For the purposes of alternative site analysis, these site safety issues are considered in terms of site acceptability, i.e., where successful mitigation is considered outside the state of the art, the site would be considered unacceptable. However, where the mitigation of the safety issues are considered to be within the state of the art, the site would be considered acceptable but still must undergo the comparative test, which includes the impact of the mitigation on overall project cost, to determine whether there is an obviously superior alternative. Even though the proposed site successfully passes the early evaluation of alternative sites, it could still be found unacceptable in the later detailed safety review of that site.

[7] For cases where the portion of the construction permit application containing facility design is filed 3 years or more after the effective date of this rule, and an early site review application for the review of alternative sites had not been filed at least 2½ years earlier, the costs of moving to another site, including costs of delay, will be given no weight in any consideration of alternative sites or in any decision whether to reopen a previous decision on this subject.

45 FR 50350
Published 7/29/80
Comment period expires 9/29/80

Modification of the Policy and Regulatory Practice Governing the Siting of Nuclear Power Reactors

See Part 50 Proposed Rule Making

45 FR 79820
Published 12/2/80
Comment period expires 1/16/81

Environmental Impact Statement for Reactor Siting Criteria

See Part 50 Proposed Rule Making

46 FR 15154
Published 3/4/81
Comment period expires 5/4/81
Comments received after the expiration date will be considered if it is practical to do so but assurance of consideration cannot be given except as to comments filed on or before that date.

10 CFR Part 51

Appendix A, Narrative Explanation of Table S–3, Uranium Fuel Cycle Environmental Data

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.[1]

SUMMARY: The Commission is publishing for public comment a proposed rule consisting of amendments and a new Appendix A to its regulation 10 CFR Part 51, "Licensing and Regulatory Policy and Procedures for Environmental Protection." Appendix A consists of a narrative explanation for Table S–3, "Uranium Fuel Cycle Environmental Data," 10 CFR 51.20(e), describing the basis for the values contained in Table S–3 and the conditions which govern the use of the

[1] This proposed rule and the accompanying narrative were developed concurrently with, but independently of, the revision of 10 CFR Part 51 made in response to the CEQ regulations. The rule and the narrative, after Commission review and action, will be conformed to 10 CFR Part 51, as published.

table. Specifically, Appendix A clarifies the significance of Table S–3 and addresses important fuel cycle impacts such as environmental dose commitments and health effects, socioeconomic impacts, and cumulative impacts, where these are appropriate for generic treatment. With certain exceptions the proposed amendments would remove from consideration in individual reactor licensing proceedings the environmental impacts addressed by Table S–3, on the grounds that the narrative in Appendix A supports a generic conclusion that these impacts cannot significantly affect the environmental cost-benefit balance for a light water reactor.

DATES: Comment period expires May 4, 1981. Comments received after the expiration date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments filed on or befor that date.

ADDRESSES: All interested persons who desire to submit written comments or suggestions for consideration in connection with the proposed explanatory narrative should send them to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C., 20555, Attention: Docketing and Service Branch. Copies of all comments received may be examined in the Commission's Public Document Room at 1717 H Street NW., Washington, D.C. It should be noted that the Commission is soliciting comments only on the narrative; the values for environmental effects given in Table S–3 have been adopted by the Commission in their final fuel cycle rule, and, hence, are not appropriate subjects for comment.

FOR FURTHER INFORMATION CONTACT: Homer Lowenberg, Assistant Director for Operations and Technology, Division of Fuel Cycle and Material Safety, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 427–4142.

SUPPLEMENTARY INFORMATION: Pursuant to the National Environmental Policy Act of 1969 (NEPA), an environmental impact statement is prepared by the Nuclear Regulatory Commission in connection with issuance of a construction permit or an operating license for each light-water nuclear power reactor (LWR). Each statement contains a detailed evaluation of the environmental impacts of construction and operation of a plant and a discussion of reasonable alternatives, as well as an overall assessment of the costs and benefits of the licensing action.

In November 1972, a document entitled "Environmental Survey of the Nuclear Fuel Cycle" was published by the Directorate of Licensing of the Atomic Energy Commission (AEC) to establish a technical basis for an informed consideration of the environmental effects of the uranium fuel cycle in the environmental impact statements for individual LWRs. The survey was not intended to be an analysis of alternatives, costs, and benefits of the entire uranium fuel cycle, i.e., it was not intended to be a complete environmental impact statement on the LWR fuel cycle; rather, it was intended to be a survey of nuclear fuel cycle production operations and related effects.

In the survey, the nuclear fuel cycle was treated generically. This approach was necessary because it was not possible to trace either the fresh or the spent fuel of an individual reactor through the fuel cycle and thus pinpoint environmental impacts at specific plants at specific points in time. Accordingly, the various steps in the fuel cycle were reviewed and models for each step were developed that would provide characteristic, but conservative, assessments of the effluents and effects from each operation.

Comments on the Environmental Survey were solicited in a **Federal Register** notice (37 FR 24191) and a hearing was held on February 1 and 2, 1973. The purpose of the hearing was to consider possible amendments to Appendix D of 10 CFR Part 50 which could, by rule, specify the environmental effects of the uranium fuel cycle that should be factored into the assessment of costs and benefits in environmental impact statements for individual LWRs. Written comments were received and recommendations for improvement were offered during the hearings. After consideration of these comments, the AEC promulgated a final fuel cycle rule (so-called Table S–3) on April 22, 1974 (39 FR 14188) and republished the earlier survey, with additions and corrections, as WASH–1248, "Environmental Survey of the Uranium Fuel Cycle." The AEC indicated that the rule and survey would be reexamined from time to time to accommodate new information. Table S–3 was codified in 10 CFR Part 51 of the NRC Regulations when Appendix D to Part 50 was redesignated in 1974.

On January 19, 1975, AEC was abolished, and its licensing and regulatory responsibilites transferred to the Nuclear Regulatory Commission. On July 21, 1976, the United States Court of Appeals for the District of Columbia Circuit decided *Natural Resources Defense Council* v. *NRC*, 547 F.2d 633 (D.C. Cir. 1976), and *Aeschliman* v. *NRC*, 547 F.2d 623 (D.C. Cir. 1976), two cases involving judicial review of the fuel cycle rule. In those cases, the court approved the overall approach and methodology of the rule. However, the court found that the rule was inadequately supported by the record

insofar as it treated two aspects of the fuel cycle—the impacts from reprocessing of spent fuel and radioactive waste management.

The Commission issued a General Statement of Policy (41 FR 34707, August 16, 1976) in response to the court decisions, announcing its intention to reopen rulemaking proceedings on the environmental effects of the fuel cycle. the purpose of the reopened proceeding was to supplement the existing record with regard to reprocessing and waste management, to determine whether the rule should be amended, and if so, in what respect. The Commission directed the staff to prepare a supplement to the survey to establish a basis for identifying environmental impacts associated with fuel reprocessing and waste management[3] activities that are attributable to the licensing of a model LWR. The supplement, NUREG–0116, was published in October 1976. The public comments, responses, and additional information on reprocessing and waste management were made available in March 1977 in NUREG–0216.

On March 14, 1977, the Commission promulgated an interim rule (42 FR 13803) incorporating revised values which had been developed for Table S–3. Hearings on the supplements and the amended rule were started in January 1978 and completed in April 1978.

The rulemaking grew well beyond a narrow inquiry into the evidentiary basis supporting the numbers tabulated in the interim rule. The broader perspective taken by the participants and the Hearing Board clarified many issues concerning fuel cycle environmental impacts not covered by Table S–3 which need to be addressed, at least conceptually, in a comprehensive fuel cycle rule. These issues include—but are not necessarily limited to—environmental dose commitments and health effects from fuel cycle releases, fuel cycle socioeconomic impacts, and possible cumulative impacts.

On July 27, 1979, the Commission approved the final rule which set out revised environmental impact values for the uranium fuel cycle to be included in environmental reports and environmental statements for reactors (44 FR 45362). In the **Federal Register** notice, the Commission announced that, as recommended by the Hearing Board, it would publish an explanatory narrative that would be part of the same rule.[3] The Commission noted that the fuel cycle rulemaking record made clear that effluent release values, standing alone, did not meaningfully convey the environmental significance of uranium fuel cycle activities. The focus of interest and the ultimate measure of impact for radioactive releases are the resulting radiological dose commitment and associated health effects. The Commission directed that an explanatory narrative be developed that would convey in understandable terms the significance of releases in the table. The narrative was also to address such important fuel cycle impacts as environmental dose commitments and health effects, socioeconomic impacts and cumulative impacts, where these are appropriate for generic treatment.

The staff has written an explanatory narrative that provides the public with some quantitative measures (dose commitments and health effects) of the radiological impacts resulting from the releases of radioactive materials specified in Table S–3. The narrative, to be extent practicable, was drawn primarily from the WASH–1248, NUREG–0116, and NUREG–0216 documents and other material in the S–3 hearing record. Material in these documents, and in the S–3 hearing record, was abstracted to form the basis of the narrative. References to applicable sections of these and other documents have been included in the narrative.

Other topics have been included in the narrative: a discussion of cumulative effects; a discussion of the methods that might be used to calculate dose commitments over long time periods and the significance of the calculations and discussion of the time period over which the waste in a repository represents a significant potential hazard. Included in the discussion of the time period over which waste in a repository represents a significant potential hazard is an analysis, based on data presented in NUREG–0116 (Table 4.19, page 4–98), of potential releases from the repository over very long periods of time if a repository did not perform as expected.

Two isotopes that may be emitted from various fuel cycle facilities have not been included in Table S–3 as a result of Commission decisions:

• Radon emissions are presently not treated in Table S–3. The value for radon emissions was specifically deleted from Table S–3 based upon recommendations of the staff and the positions of several intervenors in individual licensing actions (43 FR 15613, April 14, 1978). Accordingly, radon releases, together with an appraisal of their impacts, may be considered in individual reactor licensing proceedings.

• Technetium-99 releases are not given in Table S–3. The Fuel Cycle Rule Hearing Board concluded that the conservative assumption of complete release of iodine-129 tended to compensate for the omission of technetium from the table. However, the Commission decided that the emissions of technetium, together with an appraisal of the impacts associated with them, could be considered in individual reactor licensing proceedings.

Pending adoption of the explanatory narrative as part of the fuel cycle rule, the use of Table S–3 in individual proceedings must be accompanied by supplementary presentations. Accordingly, the Commission has directed the NRC staff to continue presenting in individual proceedings an evaluation of dose commitments and health effects from fuel cycle releases. In addition, the staff will address economic and socioeconomic impacts, possible cumulative impacts of fuel cycle activities, and other impacts of the fuel cycle as may reasonably appear to have a significance for individual reactor licensing sufficient to warrant attention for NEPA purposes. These matters currently remain open for litigation in individual proceedings.

Upon adoption of the explanatory narrative as part of the fuel cycle rule, except for radon emissions and technetium-99 releases, no further consideration of fuel cycle impacts addressed by Table S–3 and the explanatory narrative will be required or allowed in individual reactor licensing proceedings. The Commission has found, based on the narrative explanation given in Appendix A, 10 CFR Part 51, that the fuel cycle impacts addressed by Table S–3 cannot significantly affect the cost-benefit balance for a light water reactor

[3] "Waste management," as used in WASH–1248 and the Supplements, refers to the handling of wastes from post-fission operations in the fuel cycle, or other operations from which wastes arise and are shipped to some storage or burial facility.

[3] In recommending the addition of an explanatory narrative, the Hearing Board stated, "If all the impacts of the fuel cycle would be expressed in the table in terms of familiar impacts of the operation of a power plant or other common facility, other explanation might not be necessary. However, the radiological impacts and some others cannot be described in this manner. We conclude, therefore, that Table S–3 should be supplemented by a brief explanatory narrative . . . The narrative should contain a brief description of the fuel cycle, with references to specific sections of reports where more detailed information can be obtained. The numbers in Table S–3 should be related to the major sources in the narrative and the impacts should be explained.

"Environmental dose commitments resulting from the radiological releases should be discussed in the narrative. Health effects could be included or dealt with in the discussion of the health effects of reactor operation. Socioeconomic impacts should be discussed but economics need not be included."

Accordingly, with the exception of radon-222 and technetium release values and their potential significance, there shall be no further consideration of fuel cycle impacts addressed by Table S-3. Table S-3 and the material in the narrative will be referenced as support for a generic conclusion that these fuel cycle impacts cannot affect significantly the cost-benefit balance for a light water reactor.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the National Environmental Policy Act of 1969, as amended, and section 553 of Title 5 of the United States Code, notice is hereby given that adoption of the following proposed amendment to 10 CFR Part 51 is contemplated:

1. In § 51.20, paragraph (e) is revised to read as follows:

§ 51.20 Applicant's environmental report—construction permit stage.

* * * * *

(e) In the Environmental Report required by paragraph (a) for light-water-cooled nuclear power reactors, the contribution of the environmental effects of uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, reprocessing of irradiated fuel, transportation of radioactive materials and management of spent fuel and low-level wastes and high-level wastes related to uranium fuel cycle activities to the environmental costs of licensing the nuclear power reactor, shall be as set forth in Table S-3, Table of Uranium Fuel Cycle Environmental Data. No further discussion of the environmental effects addressed by the table shall be required. This paragraph does not apply to any applicant's environmental report submitted prior to (*date of publication* of final rule).

2. In § 51.23, paragraph (c) is revised to read as follows:

§ 51.23 Contents of draft environmental statement.

* * * * *

(c) The draft environmental impact statement will include a preliminary cost-benefit analysis which considers and balances the environmental and other effects of the facility and the alternatives available for reducing or avoiding adverse environmental and other effects, as well as the environmental, economic, technical and other benefits of the facility. The contribution of the environmental effects of the uranium fuel cycle activities specified in § 51.20(e) shall be addressed in the draft environmental impact statement by setting out Table S-3, Table of Uranium Fuel Cycle Environmental Data, and noting that the Commission has found, based on the narrative explanation given in Appendix A, 10 CFR Part 51, that the fuel cycle impacts addressed by Table S-3 cannot significantly affect the cost-benefit balance for a light water reactor. With the exception of radon-222 and technetium release values [4] and their potential significance, there shall be no further consideration of fuel cycle impacts addressed by Table S-3. The impact statement shall consider and take account of economic and socioeconomic impacts, possible cumulative impacts, and other fuel cycle impacts as may reasonably appear significant. The cost benefit analysis will, to the fullest extent practicable, quantify the various factors considered. To the extent that these factors cannot be quantified, they will be discussed in qualitative terms. The cost-benefit analysis will indicate what other interests and considerations of federal policy are thought to offset any adverse environmental effects of the proposed action identified pursuant to paragraph (a). Due consideration will be given to compliance of the facility construction or operation and alternative construction and operation with environmental quality standards and requirements which have been imposed by federal, state, regional, and local agencies having responsibility for environmental protection, including applicable zoning and land-use regulations and water pollution limitations or requirements promulgated or imposed by the Federal Water Pollution Control Act. The environmental impact of the facility will be considered in the cost-benefit analysis with respect to matters covered by these standards and requirements irrespective of whether a certification or license from the appropriate authority has been obtained, including any certification obtained pursuant to Section 401 of the Federal Water Pollution Control Act. While satisfaction of Commission standards and criteria pertaining to radiological effects will be necessary to meet the licensing requirements of the Atomic Energy Act, the cost-benefit analysis will, for the purposes of NEPA, consider the radiological effects of the facility and alternatives.

[4] Values for releases of Rn-222 and Tc-99 are not given in the Table. The amount and significance of Rn-222 releases from the fuel cycle and Tc-99 releases from waste management or reprocessing activities shall be considered in the draft environmental impact statement and may be the subject of litigation in individual licensing proceedings.

3. In Part 51, a new Appendix A, "Explanatory Narrative for Table S-3," Table of Uranium Fuel Cycle Environmental Data, is added to read as follows:

Appendix A—Explanatory Narrative for Table S-3, Table of Uranium Fuel Cycle Environmental Data

Section I. The LWR Uranium Fuel Cycle

A. *Introduction.* The purpose of this narrative explanation of Table S-3 is to assist the reader in identifying the major environmental impacts of each step in the fuel cycle and in determining which fuel cycle steps are the major contributors to each type of environmental impact shown in Table S-3. Table S-3 summarizes the environmental effects of the normal operations of the uranium fuel cycle associated with producing the uranium fuel for a nuclear power plant and in disposing of the spent nuclear fuel and the radioactive wastes. The values in Table S-3 were estimated principally by methods which are described in detail in the reports WASH-1248, "Environmental Survey of the Uranium Fuel Cycle,"(*1*) NUREG-0116, "Environmental Survey of the Reprocessing and Waste Management Portions of the LWR Fuel Cycle,"(*2*) and NUREG-0216, "Public Comments and Task Force Responses Regarding the Environmental Survey of the Reprocessing and Waste Management Portions of the LWR Fuel Cycle."(*3*) In addition, at a public hearing beginning on January 16, 1978, (Docket No. RM 50-3) on the reprocessing and waste management environmental effects, the Commission staff answered questions about the estimates for the back end of the fuel cycle and considered suggestions made by other participants in the hearing. The complete record of this public hearing and the three documents cited above are available in the NRC's Public Document Room at 1717 H Street, N.W., Washington, D.C., and provide further explanation of the factors considered in developing estimates for Table S-3. These reference materials contain the complete technical basis for the estimates in the Table, and give detailed descriptions of the fuel cycle operations and their environmental effects.

The following narrative explanation of the values given in Table S-3 is drawn from the record and cross-referenced to source documents for the benefit of readers seeking more information. The Table S-3 values which pertain to the front end of the fuel cycle (up to the loading of the fuel in the

reactor) are taken from WASH–1248; values pertaining to the back end of the fuel cycle are taken from NUREG–0116, with changes which are noted in the hearing record.(4) Since the narrative is designed to help the reader in interpreting the environmental effects given in Table S–3, the aforementioned documents, together with others that were cited in the documents or discussed during the hearings, are generally the only references cited in the narrative. The exceptions to this statement are found in Section III, where the staff has provided information on how long-term environmental dose commitments might be calculated, and what incremental releases from waste disposal sites might be. Since these topics were not covered in detail in WASH–1248, NUREG–0116, NUREG–0216 or the hearing record, information not in the record had to be used to develop the material.

Section I of the narrative describes the extant LWR uranium fuel cycle, the alternatives and the individual operations of the fuel cycle; Section II contains a description of the environmental effects of the LWR fuel cycle and of the individual fuel cycle operations; Section III contains a discussion of environmental dose commitments and health effects resulting from releases of radioactive materials from the fuel cycle. Section III also includes a discussion of how dose commitment evaluations over extended periods of time might be performed and what their significance might be. In addition, there is a discussion of what, if any, incremental releases from waste disposal sites might occur over very long periods of time (i.e., an evaluation of repository impacts for the repository considered in NUREG–0116). Section IV contains a discussion of socioeconomic impacts.

B. *Alternative Fuel Cycles.* The several alternative fuel cycles which can be used for present generation LWR reactors can be primarily characterized by how the spent fuel is handled, since all presently available alternatives start with uranium fuel. The alternatives are:

Once-Through Fuel Cycle:

• The spent fuel can be disposed of without recovery of residual fissionable isotopes; this is the present operating mode for U.S. nuclear reactors.

Uranium-Only Recycle:

• Uranium can be recovered from spent fuel by reprocessing and can be recycled in nuclear fuel. Plutonium can be stored for later use or combined with residual radioactive materials as wastes. Uranium-only recycle, including plutonium storage, was considered to be the most likely mode of operation at the time of preparation of WASH–1248 (1972–1974), and was the fuel cycle addressed in that document.(5) In NUREG–0116, plutonium was considered to be a waste to be disposed of at a federal repository.(6)

Uranium and Plutonium Recycle:

• Both uranium and plutonium can be recovered from spent fuel by reprocessing and recycling to the reactor, the plutonium being recycled with uranium as mixed oxide fuel. The residual radioactive materials are wastes. The wide scale use of this mode of operation was under consideration in the Commission's GESMO(7) proceeding.

There are only two LWR fuel cycles potentially licensable for wide-scale use in the United States at this time: the once-through cycle, and the uranium-only recycle fuel cycle. The back-end steps of these two fuel cycles are considered in NUREG–0116 and –0216, and the larger environmental effect of the two fuel cycles is included in Table S–3. Since the fuel cycle rule is to cover LWRs during their operating lifetime, even though there are no reprocessing plants operating in the United States at this time, the remanded hearing (Docket No. RM 50–5) of January 1978 through April 1978 considered both the once-through and uranium-only recycle fuel cycles to cover the possibility that spent fuel may be reprocessed at some future date.

C. *Fuel Cycle Operations.* Many different operations are required for either the once-through fuel cycle or the uranium-only recycle fuel cycle. Operations involved in preparing fresh fuel for use in a reactor are collectively known as the "front end" of the fuel cycle. The operations following irradiation of the fuel in the reactor are known as the "back end" of the fuel cycle. Figure 1 shows a block flow diagram for the front end of the fuel cycle; Figures 2a and 2b show the back end of the once-through and uranium-only recycle fuel cycles respectively.

LWR URANIUM FUEL CYCLE FRONT END OPERATIONS

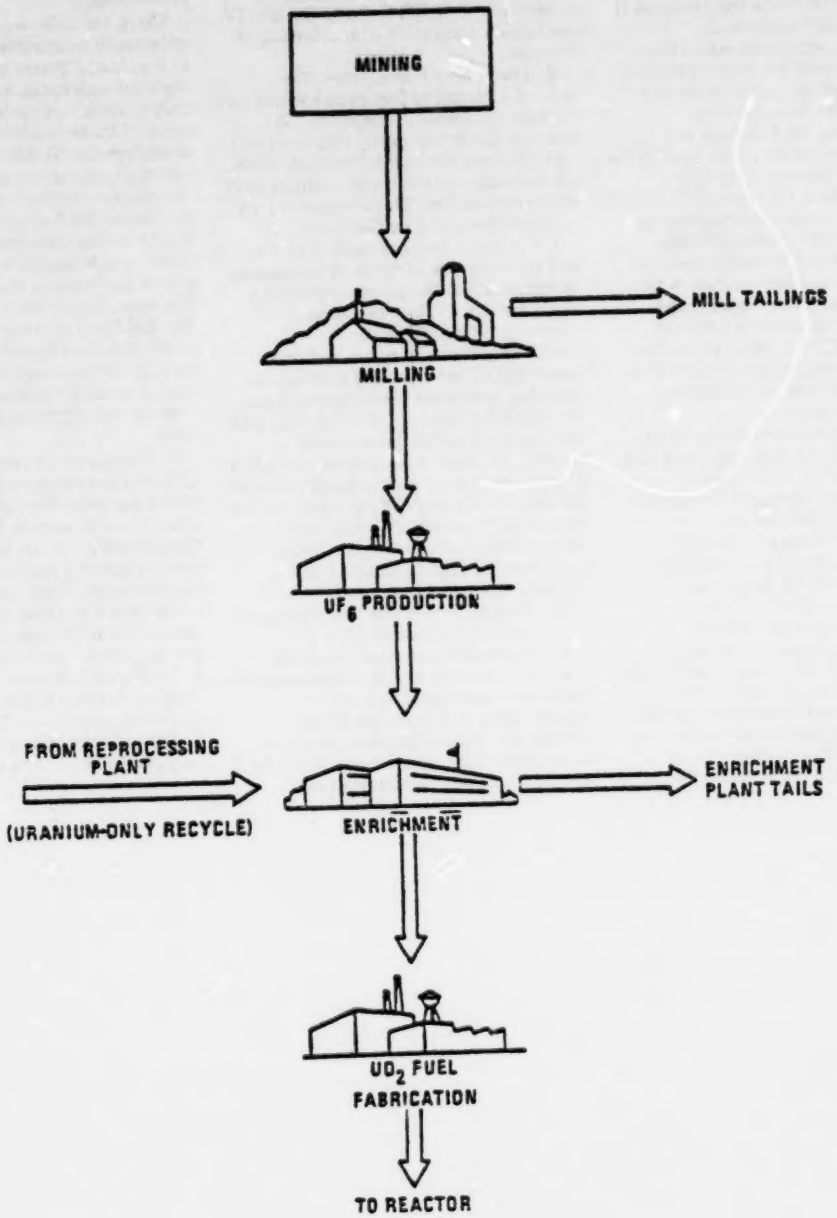

Figure 1 LWR Uranium Fuel Cycle Front End Operations

LWR URANIUM FUEL CYCLE BACK END OPERATIONS

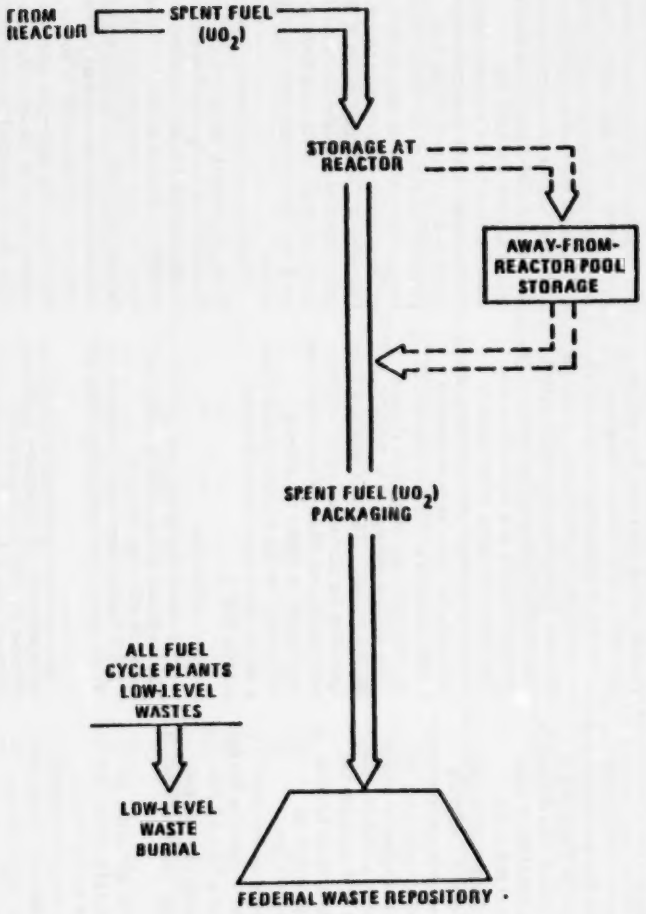

Figure 2a Once-Through Fuel Cycle

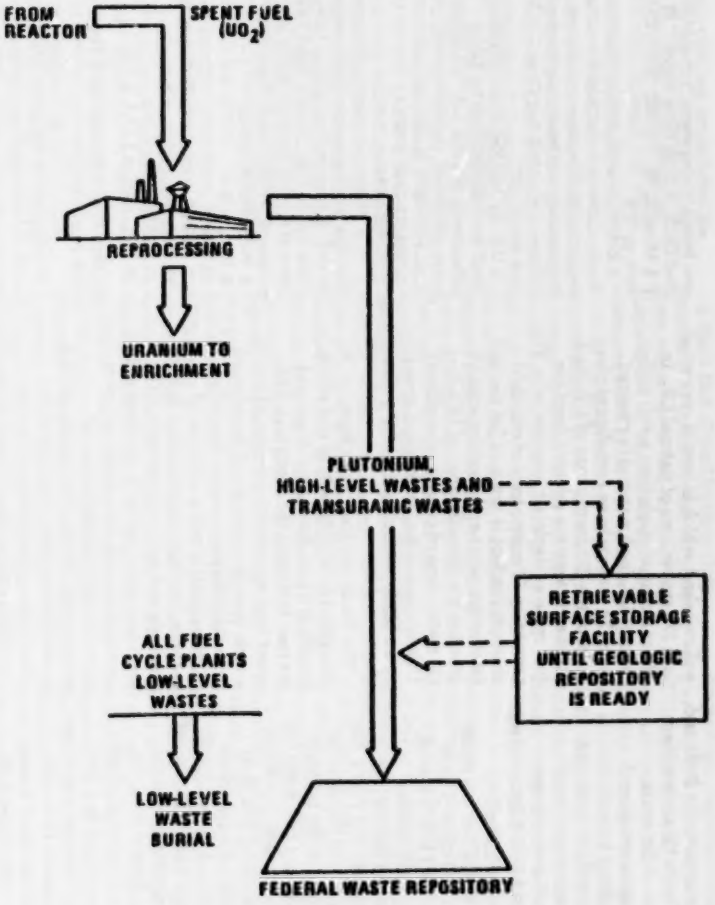
FROM REACTOR
SPENT FUEL (UO_2)
REPROCESSING
URANIUM TO ENRICHMENT
PLUTONIUM, HIGH-LEVEL WASTES AND TRANSURANIC WASTES
RETRIEVABLE SURFACE STORAGE FACILITY UNTIL GEOLOGIC REPOSITORY IS READY
ALL FUEL CYCLE PLANTS LOW-LEVEL WASTES
LOW-LEVEL WASTE BURIAL
FEDERAL WASTE REPOSITORY

Figure 2b Uranium-Only Recycle Fuel Cycle

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Five operations comprise the front end of the fuel cycle (Figure 1): ore is mined; the uranium content of the ore is recovered as an impure compound (yellowcake) by milling; a purified uranium compound (UF_6) is produced; the uranium-235 content of natural uranium is increased at enrichment plants; and uranium fuel is fabricated.(*6*)

Two different sets of operations comprise the back end of the fuel cycle. In the once-through fuel cycle (Figure 2a), spent fuel from the LWR is stored, either at the reactor or at special facilities away from the reactor, for periods of time in excess of 5 years. The spent fuel is packaged and disposed of in Federal repositories. In the uranium-only recycle mode (Figure 2b), spent fuel is stored at reactors for short periods of time (greater than 90 days), and then shipped to reprocessing plants, where uranium is recovered in a form suitable for feed to enrichment plants. Plutonium and other residual materials from the spent fuel (cladding, fission products, actinide elements, activation products) are solidified, and packaged in a form suitable for disposal. Current regulations (10 CFR Part 50, Appendix F) require that certain wastes from reprocessing plants be solidified within 5 years of their generation and that these wastes be disposed of within 10 years of their generation. Most of the waste from reprocessing plants will be disposed of at Federal repositories.

D. *The Model Reactor and its Fuel Cycle Requirements.* For the purposes of developing the values in Table S-3, a model light-water reactor was defined in WASH-1248 as a 1,000-MWe reactor assumed to operate at 80% of its maximum capacity for one year, thus producing 800 MW-yrs of electricity annually.(*9*) The fuel cycle requirements averaged over a 30-year operating life for this reactor were labelled an annual fuel requirement (AFR) in WASH-1248. Since that time, the AFR acronym has been used to characterize away-from-reactor storage of spent fuel. In NUREGs-0116 and -0216, the terminology "reference reactor year" (RRY) was employed to describe the fuel cycle requirements of a model 1,000-MWe reactor operating for one year. The same terminology will be utilized in this narrative.

The front end of the fuel cycle, as described in WASH-1248, covers the supply of fuel for the model reactor; 91,000 metric tons of ore (containing 2 parts of U_3O_8 per 1,000 parts of ore) are required per RRY. Milling of the ore produces 182 metric tons of yellowcake,* which in turn is converted into 270 metric tons of natural UF_6. In the enrichment operation, much of this natural UF_6 feed material is rejected from the fuel cycle as enrichment plant tails. of the 270 metric tons of UF_6 feed, 218 metric tons are rejected from the fuel cycle as depleted uranium tails. The remaining 52 metric tons of enriched uranium product is the feed for the fuel fabrication plant and contains enough uranium for 40 metric tons of UO_2 fuel (35 metric tons of contained uranium). This amount of fuel is required annually by an LWR producing 800 MW-years of electricity.(*10*)

The back-end fuel cycle steps, described in NUREGs-0116 and -0216, handle the post-fission products and wastes, including the spent fuel. The spent fuel, which still contains about 34 metric tons of uranium,(*11*) is removed from the reference reactor annually. (Approximately one metric ton of uranium has been converted to fission products and actinide elements.) The fresh and spent fuel is in the form of fuel assemblies, each containing between about 0.2 and 0.5 metric tons of uranium.(*12*) Hence, the number of fuel assemblies handled in each reactor reload ranges from about 70 to 180, depending on the type of reactor. For the once-through fuel cycle, this fuel is stored under water for periods of time in excess of 5 years, either at the reactor site or at offsite facilities. Following the storage period, the spent fuel will be disposed of at a Federal repository.(*13*)

For the uranium-only recycle option, the spent fuel is reprocessed to recover uranium. Plutonium (about 0.35 metric tons per RRY)(*14*) may be recovered as plutonium oxide in a separate stream. The fission products, other actinide elements, and activation products are concentrated into one or more solid waste products which are disposed of together with any plutonium stream.

To develop the values in Table S-3, the environmental effects resulting from operating the model fuel cycle facilities were estimated. These effects were then normalized to reflect the effects attributable to the processing of fuel for a single year's operation of a model reactor (RRY).

Section I—References

1. U.S. Atomic Energy Commission, "Environmental Survey of the Uranium Fuel Cycle," WASH-1248 1974, p. iv.

2. U.S. Nuclear Regulatory Commission, "Environmental Survey of the Reprocessing and Waste Management Portion of the LWR Fuel Cycle, A Task Force Report," W. Bishop, F. J. Miraglia, Ed., NUREG-0116, October 1976, pp. i, ii.

3. U.S. Nuclear Regulatory Commission, "Public Comments and Task Force Responses Regarding the Environmental Survey of the Reprocessing and Waste Management Portions of the LWR Fuel Cycle," NUREG-0216, March 1977.

4. U.S. Nuclear Regulatory Commission, "Staff Recommendations for Minor Adjustments to Table S-3," submitted by James Lieberman, Counsel for NRC Staff, Docket RM 50-3, January 19, 1978.

5. WASH-1248, p. S-3.

6. NUREG-0116, p. S-12.

7. "U.S. Nuclear Regulatory Commission, Final Generic Environmental Statement on the Use of Recycle Plutonium in Mixed Oxide Fuel in Light Water Cooled Reactors," Office of Nuclear Material Safety and Safeguard, NUREG-0002, August 1976.

8. WASH-1248, p. S-2.

9. Ibid., p. S-5.

10. Ibid.

11. NUREG-0002, Table IV C-8, p. IV C-75.

12. Ibid., Section 3.28, p. 3-8.

13. NUREG-0116, p. 4-6.

14. Ibid., Section 3.2.7.1, p. 3-9.

Section II. Environmental Effects of the LWR Fuel Cycle

A. *Environmental Data.* Table S-3, Table of Uranium Fuel Cycle Environmental Data, is a summary of environmental impacts attributable to the uranium fuel cycle, normalized to the annual fuel requirement in support of a model 1,000-MWe LWR. Data from the "front end" of the uranium fuel cycle, based on WASH-1248, have been combined with data from the "back end," which is based on NUREGs-0116 and-0216 and the remanded proceeding (Docket No. RM-50-3). Table S-3A, which follows, set forth the contributions by the various segments of the fuel cycle to the total values given in Table S-3. In general, Table S-3 presents the sum of the higher values taken either the once-through fuel cycle or the uranium-only recycle option. The following is a brief discussion of the environmental considerations related to the "back end" of the once-through fuel cycle and the uranium-only recycle option.

1. Back End of the Once-Through Fuel Cycle. At present, spent fuel discharged from LWRs is being stored in the United States pending a policy decision whether to dispose of the irradiated spent fuel as a waste product—the once-through fuel cycle, or to reprocess spent fuel and recover the residual fissile values for recycle as fuel in power reactors, in this case—the uranium-only recycle option. In the once-through fuel cycle, the storage and disposal of spent fuel as waste, along with other waste

*Varying fuel cycle operating conditions including reactor parameters, yellowcake purity, enrichment tails assay, etc. affect the yellowcake RRY requirement which is thus subject to considerable variation.

management activities, constitutes the "back end" of the uranium fuel cycle. (1)

The environmental considerations related to the once-through fuel cycle are summarized in column F of Table S-3A. It is expected that spent fuel will remain in interim storage facilities for periods of up to 10 years or more to reduce radiation and heat emissions prior to packaging and disposal, and because facilities for the permanent disposal of spent fuel are not yet available.(2) Thus, column F includes the environmental impacts of extended pool storage as well as spent fuel disposal in a deep salt bed, geological repository. Low-level wastes, and decontamination and decommissioning wastes, from all segments of the fuel cycle are also included in column F.(3) There are no significant amounts of transuranic (TRU) wastes generated in the once-through fuel cycle.

It has been assumed that spent fuel or high-level wastes will be disposed of in a geologic, bedded salt, repository.(4) Operation of repository facilities is similar for both spent fuel or high-level waste, and it has been assumed that a repository in bedded salt will be designed and operated so as to retain the solid radioactive waste indefinitely. However, the radiological impacts related to the geologic disposal of spent fuel are based on the assumption that all gaseous and volatile and radionuclides in the spent fuel are released before the geologic repository is sealed.(5) Since the gaseous and volatile radionuclides are the principal contributors to environmental dose commitments, this assumption umbrellas the upper bounds of the dose commitments that may be associated with the disposal of spent fuel.

2. Back End of the Uranium-Only Recycle Fuel Cycle Option. At present, there are no spent fuel reprocessing plants in the United States that can reprocess LWR spent fuel. Moreover, if a policy decision is made to permit reprocessing of spent fuel, the capability to reprocess spent fuel in the United States may not be available until about the early 1990s. However, if LWR spent fuel is reprocessed, the environmental impacts from reprocessing and related waste management activities are nearly identical for the recycling of uranium and plutonium, and for the recycling of uranium-only, as fuel in nuclear power reactors. Whether plutonium will be used as a fuel in LWRs, or breeder reactors, or both, is a separate issue that will be resolved in connection with the policy decision whether to resume reprocessing in the United States. For this purpose, to cover the contingency that at some future date spent fuel from LWRs may be reprocessed, it has been assumed that only the uranium that is recovered from the reprocessing of spent fuel from LWRs will be recycled as fuel to LWRs. The plutonium is not recycled for its fuel value in LWRs; instead, it becomes a byproduct waste that may be disposed of in a manner similar to that for high-level waste.(6) This is called the uranium-only recycle option, and its environmental considerations are summarized in columns G (Reprocessing) and H (Waste Management) of Table S-3A, and the other segments of the fuel cycle, excluding column F.*

With respect to waste management activities associated with the uranium-only recycle option (column H), the environmental considerations include the geologic disposal of high-level wastes (HLW), transuranic wastes (TRU), plutonium low-level or nontransuranic wastes, and the disposal of wastes from decontamination and decommissioning of fuel cycle facilities.(7) The environmental considerations relevant to waste management activities directly related to reprocessing, such as storage of liquid wastes in tanks, waste solidification and packaging, and interim storage of solidified wastes at the reprocessing site, are included in column G.

It has been assumed that a geologic repository will be designed and operated so as to retain solid radioactive waste indefinitely. However, to umbrella the upper bounds of the environmental dose commitments that may be associated with reprocessing and waste management operations related to the uranium-only recycle option, it has been assumed that all of the gaseous and volatile radionuclides contained in the spent fuel are released to the atmosphere prior to the disposal of the wastes.(8) The gaseous radionuclides (tritium, carbon-14, and krypton-85) and the volatile radionuclide iodine-129 are the principal contributors to environmental dose commitments from the "back end" of the uranium fuel cycle.

*It should be noted that column F, and columns G and H, are not added together to arrive at totals, but are presented as alternatives. Column F presents the environmental effects associated with the back end of the once-through fuel cycle (no reprocessing), and columns G and H present the environmental effects associated with the back end of the uranium-only recycle (reprocessing) option. The higher value from these two alternative fuel cycles is added to arrive at totals.

Table S-3A.—Summary of Environmental Considerations for LWR Fuel Cycle by Component Normalized to Model LWR Reference Reactor Year

	A Mining	B Milling*	C UF,Prod.	D Enrich-ment	E Fuel Fab.	F Spent fuel storage and disposal	G Reprocess-ing	H Waste mgmt. for uranium recycle	I Trans-portation	Total
NATURAL RESOURCE USE										
Land (acres):										
Temporarily committed	56	0.5	2.5	0.8	0.2	7.7	32	9.0	.....	100
Undisturbed area	38	0.2	2.3	0.6	0.16	7.5	28.5	8.6	.....	79
Disturbed area	17	0.3	0.2	0.2	0.04	.192	3.5	0.35	.....	22
Permanently committed	2	2.4	0.02	0.0	0.0	7.7	0.12	0.4	.....	13
Overburden moved (millions of MT)	2.7	.....	.....	.....	.....	.001	0.1	0.0015	.....	2.8
Water (millions of gallons):										
Discharged to air	.....	65	3.3	84	.....	11.4	8.8	0.89	.....	160
Discharged to water bodies	.....	.....	23.0	11,006	5.2	.06	54.6	.....	.....	11,090
Discharged to ground	123	.....	.....	.....	.....	3.1	.....	3.5	.....	127
Total water	123	65	26.3	11,090	5.2	14.5	61.4	4.2	.....	11,377
Fossil fuel:										
Electrical energy (thousand MWh)	0.25	2.70	1.70	310	1.7	1.9	4.0	2.3	.....	323
Equivalent coal (thousands MT)	0.09	0.97	0.62	113	0.62	0.7	1.5	0.82	0.016	118
Natural gas (million scf)	.....	68.5	20.0	.....	3.6	12	26.6	14	.....	135
EFFLUENTS:										
Chemical (MT):										
SO_x	8.5	37.0	29.0	4,300	23	0.036	8.4	0.03	0.046	4,400
NO_x	5.0	15.9	210.0	1,130	6	0.04	21.9	0.065	0.62	1,190
Hydrocarbons	0.3	1.3	0.8	11	0.06	0.0004	0.5	0.02	0.062	14
CO	0.02	0.3	0.2	28	0.15	0.026	0.5	0.029	0.38	29.6
Particulates	.....	9.7	7.6	1,130	6	0.000068	0.6	0.02	0.012	1,154

Table S-3A.—Summary of Environmental Considerations for LWR Fuel Cycle by Component Normalized to Model LWR Reference Reactor Year—Continued

	A Mining	B Milling[4]	C UF6 Prod.	D Enrichment	E Fuel Fab.	F Spent fuel storage and disposal	G Reprocessing	H Waste mgmt. for uranium recycle	I Transportation	Total
Other gases:										
F-			0.11	0.5	0.006		0.05			0.67
Cl-						0.013	0.008	0.013		0.014
Liquids:										
SO_x			4.5	5.4			<0.02			9.9
NO_x			0.1	2.7	23					25.8
Fluoride			8.8		4.1					12.9
Ca				5.4						5.4
Cl-			0.2	8.2			0.09			8.5
Na+			3.9	8.2			<0.02			12.1
NH_3			1.5		10.9					10.0
Fe				0.4						0.4
Tailings solutions (thousands)		340								340
Solids		91,000	40		26			0.42		91,000
RADIOLOGICAL (CURIES)										
Gases (including entrainment):[5]										
Rn-222		0.02				4.5×10^{-1}		4.5×10^{-1}		0.02
Ra-226		0.02				4.5×10^{-1}		4.5×10^{-1}		0.02
Th-230		0.03	0.0015	0.002	0.0002	7.3×10^{-3}	0.000039	7.3×10^{-3}		0.004
Uranium						14	18.1	8.8×10^{-2}		18.1
Tritium (thousands)						19	24			24
C-14						290.70	400	1.1×10^{-1}		400
Kr-85 (thousands)							0.14			0.14
Ru-106						1.3	0.03			1.3
I-129						.003	0.83			0.83
I-131										0.203
Fission Products and Transuranics										
Liquids:										
Uranium and daughters		2	0.044	0.02	0.02	5.9×10^{-3}		5.4×10^{-3}		2.1
Ra-226			0.0034							0.0034
Th-230			0.0015							0.0015
Th-234					0.01					0.01
Tritium (thousands)						5.9×10^{-3}		4.5×10^{-3}		5.9×10^{-3}
Fission and Activation Products										
Solids (buried onsite):										
Other than high level (shallow)		600	0.86		0.23	4700.	0.52	10,700		11,300
TRU and HLW (deep) (millions)						11		11		11
Thermal (billions of Btu)		69	20	3,200	9	750	75.5	689	0.014	4,063

(1) Estimated effluents based upon combustion of equivalent coal for power generation.
(2) 25% from natural gas use.
(3) Combined effluents from combustion of coal and natural gas and process tankage; contains 0.2 MT of Hexane.
(4) Contains about 60% Potassium.
(5) In the "uranium recycle" case, gaseous radionuclides are assumed to be released in reprocessing, and the releases are shown in the "Reprocessing" column (G). In the "once-through" case, where spent fuel goes to geologic disposal, gaseous radionuclides are assumed to leak out of the fuel at the repository; the amounts are shown in column F. Only the larger of the two values is added into the "Total" column, since they represent alternative cases.
"Numbers presented for uranium milling are taken from WASH-1248. They are not necessarily consistent with more recent staff stall analyses, e.g., those presented in NUREG-0511, "Draft Generic Environmental Impact Statement on Uranium Milling," published in April 1979.

B. *Environmental Considerations of Uranium Fuel Cycle Options.* This section is a brief discussion of the environmental considerations of the uranium cycle, which are summarized in Table S-3 [1] and Table S-3A. It also provides a brief explanation of how the vaules in Table S-3, which has been normalized to a model 1,000-MWe reference reactor year (RRY), can be converted into the cumulative environmental effect over the 30-year reference reactor lifetime, and in turn converted into the cumulative environmental effect related to a prospective nuclear power forecast.[2] The narrative is drawn primarily from the WASH-1248, NUREG-0116, and NUREG-0216 documents, and the S-3 hearing record. References to applicable sections of these documents are included in the narrative.

It should be noted that radon emissions from the front end of the fuel cycle and technetium-99 release estimates for the back end of the fuel cycle are not given in Table S-3. Accordingly, radon and technetium releases, together with an appraisal of their impacts, may be the subject of litigation in individual reactor licensing proceedings.(9)

1. Natural Resource Use.

a. Land.

The totel land use per RRY attributable to the uranium fuel cycle in support of a model 1,000-MWe LWR is about 113 acres, of which about 100 acres are temporarily committed, and about 13 acres are permanently committed. About 80% of the temporarily committed land used by fuel cycle facilities is undisturbed land. Temporarily committed land, which is used during the life of specific fuel cycle facilities, can be released for unrestricted use after those facilities are closed down and decommissioned. Permanently committed land is that land which may be used for waste disposal but may not be released for unrestricted use after certain facilities have ceased operating and are decommissioned.(10)

The mining of unranium ore accounts for about 55% of the temporarily committed land use of the entire uranium fuel cycle. Mining operations also account for most of the overburden moved: 2.7 million metric tons compared to a total of 2.8 million metric tons per RRY for the entire fuel cycle. Next to mining, reprocessing and waste management operations use most of the remaining temporarily committed land attributable to the uranium fuel cycle. Of the permanently committed land use attributable to the uranium fuel cycle, mining and milling operations account for about 35%, and most of the remaining 65% is used for the disposal of radioactive wastes (8.5 acres/RRY).

[1] Table S-3 summarizes the total environmental considerations given in the column "Total" of Table S-3A.

[2] Most effluent values, unless indicated otherwise, can be converted from RRY values to reactor lifetime values by multiplying the value/RRY by 30 years (reactor life).

To determine the cumulative land use effect related to a prospective nuclear economy, one must first convert the land use per RRY to land use per model 1,000–MWe LWR lifetime (30 years), and then multiply that value by the equivalent number of model 1,000–MWe LWRs projected (GWe). The weighted average factor to convert land use per RRY to land use per model LWR life is about 40.

The conversion factor of 40 is a weighted average that results from consideration of three factors: land use for facilities; land use for waste management, which increases with time; and ore depletion and mill recovery performance over the life of the reactor. In WASH–1248, uranium mining and milling operations were based on an average ore grade of 0.2% and 100% mill recovery, which represented current operations. However, a later analysis developed for NUREG–0002 indicated that when ore depletion and mill recovery performance is considered over the years 1976–2000, it would be more appropriate to use an average ore grade of 0.1%, with 90% mill recovery, over the life of an LWR. Thus, to convert land use per RRY to land use per LWR life committed to mining and milling, the land use per RRY should be multiplied by 67. Added to this value is the land use per RRY for UF_6 production, enrichment, fuel fabrication, and reprocessing; and 30 time the land use per RRY for waste management operations. For the reason given above, since most of the "overburden moved" is related to the mining of uranium ore, the factor used to convert MT/RRY of overburden moved to MT/LWR life is 67.

Environmental Effects: The land use requirements related to the fuel cycle in support of a model 1,000–MWe LWR do not represent a significant impact. A 1,000–MWe coal-fired power plant that uses strip-mined coal requires the disturbance of about 200 acres of land per year for obtaining coal alone. Thus, for comparison, the coal plant disturbs about 10 times as much land as the disturbance attributable to the entire fuel cycle in support of the model 1,000–MWe LWR.

b. Water.

The principal use of water in the fuel cycle supporting a model 1,000–MWe LWR is for cooling. Of the total 11,377 million gallons of water use per RRY, about 11,000 million gallons are required to remove heat, by once-through cooling, from the power stations that supply electrical energy for uranium enrichment.

The discharge of water to surface streams is in accordance with the National Pollutant Discharge Elimination System Permits issued by EPA and the states. Drainage water pumped out of uranium mines (123 million gallons/RRY) and from waste management operations (3.5 million gallons/RRY) is discharged to the ground. Of the 160 million gallons of water evaporated per RRY, about 65 million gallons of water are evaporated from mill tailings ponds, and the other 95 million gallons of water are evaporated from cooling water from fuel cycle facilities.

To determine the cumulative water use effect related to a prospective nuclear economy, one must first convert water use per RRY to water use per model 1,000–MWe LWR lifetime (30 years), and then multiply that value by the equiv-lent number of model 1,000–MWe LWRs projected (GWe). The factor used to convert water use per RRY to water use per model LWR life is 30. However, to determine the water use evaporated or discharged to ground, the conversion factor for mining and milling operations is 67; and the factor for other fuel cycle operations is 30.

Environmental Effect: The water use requirements related to the fuel cycle in suport of a model 1,000–MWe LWR do not represent a significant impact. If all plants supplying electrical energy used cooling towers, the water use of the fuel cycle would be about 6% of that required by the model 1,000–MWe LWR. The evaporated water loss of the fuel cycle is about 2% of the evaporated water loss of a model 1,000–MWe LWR cooling tower.

c. Fossil Fuel.

Electrical energy and process heat are used in the fuel cycle. The electrical energy (323 thousand MWh/RRY), of which about 96% is used for uranium enrichment, is produced by conventional, coal-fired, power plants.(T312T1) Most of the process heat used in the fuel cycle is supplied by the combustion of natural gas (135 million scf/RRY). In general, about 50% of the natural gas is used for yellowcake drying.(T313T1) 15% is used in UF_6 production, 3% is used in fuel fabrication, 22% is used in reprocessing, and 10% is used in waste management operations.

To determine the cumulative fossil fuel use effect related to a prospective nuclear economy, multiply the fossil fuel per RRY value by 30 to convert to the fossil fuel use over the 30-year life of the model 1,000-MWe LWR, and then multiply that value by the equivalent number of model 1,000-MWe LWRs projected (GWe).

Environmental Effect: The fossil fuel use requirements related to the fuel cycle in support of a model 1,000-MWe LWR do not represent a significant impact. The electrical energy needs of the fuel cycle are only about 5% of the electrical energy produced by the model 1,000-MWe LWR. If the natural gas consumed by the fuel cycle were used to generate electricity, it would contribute less than 0.4% of the electrical energy produced by the model LWR.

2. Effluents—Chemical.

a. Gases.

The gaseous chemical effluents from the fuel cycle result, for the most part, from the combustion of fossil fuel to provide electrical energy or process heat for fuel cycle facilities.(*14*) To determine the cumulative gaseous chemical effect related to a prospective nuclear economy, perform the calculation in a manner similar to that given above for fossil fuel.

Environmental Effect: The gaseous chemical effluents related to the fuel cycle in support of a model 1,000-MWe LWR do not represent a significant impact. Based on data in a Council on Environmental Quality report,(*15*) these emissions represent a very small addition (about 0.02%) to emissions from transportation and stationary fuel combustion in the United States.

b. Other Gases.

Small amounts of halogen compounds are released as gaseous effluents to the environs, primarily as fluorides from UF_6 conversion and uranium enrichment operations.

Environmental Effect: Measurements of fluorine in unrestricted areas indicate concentrations below the level at which deleterious effects have been observed.(T316T1) Moreover, long-term observations have not revealed any adverse effects attributable to fluoride releases from UF_6 conversion, uranium enrichment, and fuel fabrication facilities.

c. Liquids and Solids.

Some liquid chemical effluents are released to surface waters from UF_6, enrichment, and fuel fabrication facilities. Tailings solutions from the uranium mill account for the bulk of mass of liquid (240 thousand MT/RRY) and solid (91 thousand MT/RRY) effluents from the fuel cycle. However, the tailings solutions are slowly dissipated by natural processes, principally through evaporation, leaving the tailings solids for eventual disposal.(*17*)

There are two major aqueous waste streams associated with the wet UF_6 conversion process.(*18*) One is made up of dilute scrubber solutions that are treated with lime to precipitate calcium fluoride, which is then diluted with

cooling water effluent before it is released. The other is a raffinate streams which is held in sealed ponds from which the water is allowed to evaporate. The solids which are recovered from the settling ponds are packaged and ultimately buried. The discharge of water to surface stream is in accordance with a National Pollutant Discharge Elimination System Permit issued by EPA or the state.

A number of chemicals (primarily calcium, chlorine, sodium, and sulfate ions) are present in the liquid effluent from the enrichment plant. Water treatment and dilution by the receiving river reduces the concentration of chemicals to a small fraction of the recommended permissible water quality standards.(*19*)

The liquid effluent from fuel fabrication facilities contains nitrogen compounds resulting from the use of ammonium hydroxide in the production of UO_2 powder, and from the use of nitric acids in scrap recovery operations. The fluorine introduced into the fuel cycle during UF_6 production becomes a waste product during the production of UO_2 powder. The gaseous fluoride is removed from the effluent air streams by water scrubber systems.(*20*) The scrubber system wastes are treated with lime to precipitate calcium fluoride, which is filtered from the waste effluent stream and packaged (about 11 cubic yards/RRY) for disposal.(*21*) The discharge of water to surface streams is in accordance with a National Pollutant Discharge Elimination System Permit issued by EPA or the state.

To determine the mass of tailings solution and solid tailings related to a prospective nuclear economy, which are a function of the average grade of ore processed, multiply the values for tailings solutions and solids in Table S-3 by 67 to obtain the mass of tailings solution and tailings generated over the model LWR lifetime.

Environmental Effect: The liquid and solid chemical effluents related to the fuel cycle in support of a model 1,000-MWe LWR do not represent a significant impact. All liquid discharges from fuel cycle facilities into the navigable waters of the United States are subject to requirements and limitations set forth in the National Pollutant Discharge Elimination System Permit issued by an appropriate state or federal regulatory agency. When milling activities are terminated, the tailings pile must be graded, covered with earth and topsoil, and seeded to reduce radon emanation.*

3. Effluents—Radiological.

a. Gases and Liquids.

Table S-3 summarizes (except from radon-222 and technetium-99) the curies of radioactivity released per RRY in the gaseous and liquid effluents from the uranium fuel cycle in support of a model 1,000-MWe LWR. In general, the natural radionuclides (radium, thorium, and uranium) are released from the front end, and the other radionuclides are released from the back end of the fuel cycle.

In the front end of the fuel cycle, small amounts of radium, thorium, and uranium are released to the environment in the gaseous process effluents and in the ventilation air discharged to the atmosphere from milling, UF_6 production, enrichment, and fuel fabrication facilities. Small amounts of uranium and its daughters also are released in the liquid effluents from these facilities, but most of these radionuclides become part of the solid waste collected in the tailings pile from milling operations or in settling ponds associated with the other front end operations.

In the once-through fuel cycle, the spent fuel is stored for five or more years and then disposed of in a geologic respository when the repository is available to receive spent fuel.(*22*) During interim storage prior to sealing of the repository, some of the gaseous and volatile radionuclides contained in the spent fuel may escape due to the failure of the fuel element cladding and leakage of the spent fuel disposal containers.(*23*)

About 50% of the krypton, 10% of the carbon-14, and 1% of tritium and iodine contained in spent fuel exists within the gas space in the fuel rod and is likely to be released from the fuel rod if the cladding fails. However, the curies of tritium, carbon-14, krypton-85, and iodine-129, given in Column F of Table S-3A, represent the total curies of each contained in 35 metric tons of spent fuel (the annual reference reactor fuel requirement), irradiated to 33,000 MWd/MT, and aged 5 years. Since the site and method for spent fuel disposal have not yet been defined, the NRC staff cannot determine what amounts of radionuclides may eventually escape from the repository or when they may enter the environment. However, the NRC staff has identified which radionuclides have the higher probability of migrating from a repository, and which of these radionuclides are the principal contributors to environmental dose commitments if they do eventually enter the biosphere. In general, the gaseous radionuclides that escape from failed fuel rods, or leaking waste canisters, before the repository is sealed, and the very long-life radionuclides that have low retardation in soils, such as iodine-129, which may migrate with groundwater and eventually reach the biosphere, are the principal contributors to environmental dose commitments. Accordingly, to umbrella the upper bounds of prospective dose commitments, it has been assumed in Table S-3 that all of the tritium, carbon-14, krypton-85, and iodine-129 contained in 5-year-old spent fuel per RRY have been released to the environment.

In the uranium-only recycle option, the spent fuel is reprocessed. During reprocessing, the gaseous radionuclides (tritium, carbon-14, and krypton-85) are released to the atmosphere; however, most of the iodine is removed from the process effluents. (*24*) The radiological effluents related to the uranium-only recycle option are given in column H of Table S-3A. These values, per RRY, are based on the reprocessing of 6-month-old spent fuel.

Since the radiological effluents given in Table S-3 are based on the higher values taken from either fuel cycle, the radiological considerations related to the back end of the fuel cycle are based on 100% release of the tritium, carbon-14, krypton-85, and iodine-129 contained in 6-month-aged spent fuel, and small amounts of other fission products and transuranic radionuclides that may be released if spent fuel were reprocessed.

Environmental Effect: Excluding radon, the radiological effluents released per RRY from the fuel cycle in support of the model 1,000-MWe LWR result in an estimated 100-year environmental dose commitment to a U.S. population of 300 million persons of about 650 person-rem, of which about 550 person-rem is attributable to gaseous effluents and about 100 person-rem is attributable to liquid effluents. Of the dose commitment attributable to gaseous effluents, about 42% is from tritium, 31% is from carbon-14, 5% is from krypton-85, 10% is from iodine, and the balance (12%) is from all other radionuclides, which contribute primarily to the local population dose commitment. Although tritium and carbon-14 account for most of the population dose commitment from the uranium fuel cycle, tritium and carbon-14 produced in the world's atmosphere by cosmic radiation contribute about 1% of the total population dose commitment from natural background radiation. However, that 1% implies that naturally occurring tritium and carbon-14 will

*At this time, radon emissions are excluded from the S-3 fuel cycle rule. Proposed regulations related to the disposal of mill tailings were published in the Federal Register on August 24, 1979.

result in about 300,000 person-rem each year to the U.S. population, or about 30,000,000 person-rem over a 100-year period.

Although radon effluents are excluded from Table S–3, the dose commitment from radon has to be added to the above fuel cycle environmental dose commitment to arrive at the estimated dose commitment attributable to the entire fuel cycle. Based on recent studies, the 100-year environmental dose commitment per RRY attributable to radon emissions from mining and milling is about 210 person-rem.(*25*)

On this basis, the 100-year environmental dose commitment attributable to the entire fuel cycle is about 860 person-rem per RRY. For comparison, the annual dose commitment to a U.S. population of 300 million from natural background radiation results in about 30,000,000 person-rem. Thus, the dose commitment per RRY from the fuel cycle is about 0.003% of the annual dose commitment, and about 0.00003% of the 100-year environmental dose commitment, to the U.S. population from natural background radiation. Section III contains an assessment of the environmental dose commitment to the U.S. population attributable to the radiological effluents, except radon, released from the uranium fuel cycle.

b. Solids.

The curies per RRY of radionuclides in buried radioactive low-level, high-level, and transuranic waste materials are given in Table S–3. As discussed above, it is assumed that there will be no release of solid radionuclides to the environment from buried solid waste materials. Moreover, the radiological effluents from waste management are so small in relation to the other segments of the fuel cycle that they do not show up in the totals presented in Table S–3.(*26*)

About 10,700 curies of mixed radionuclides are buried per RRY at low-level waste land burial sites. Of this total, 9,100 curies come from LWR low-level waste(*27*) 1,500 curies are attributable to decommissioning of nuclear facilities, including the reactor;(*28*) and the balance, about 100 curies, is generated by the uranium fuel cycle operations in support of the LWR. About 600 curies of uranium and its daughters are added per RRY to the tailings pile at the mill site.(*29*)

The high-level radioactive waste from the once-through fuel cycle is the spent fuel assemblies, which will be packaged and disposed of in a geologic repository. The radioactive waste from the uranium-only recycle option consists of the fuel assembly hulls, the high-level and intermediate-level wastes from reprocessing, and the plutonium waste. These wastes will be disposed of in a geologic repository in the form of solids which will have chemical and physical properties that mitigate the release of radionuclides to the environs. It is assumed that the geologic repository will be designed and operated so that the solid radioactive wastes are confined indefinitely.

Environmental Effect: There are no significant releases of solid radioactive materials from shallow land-burial facilities, or from the geologic repository, to the environment.

4. Effluents—Thermal.

The uranium fuel cycle in support of a model 1,000-MWe LWR discharges approximately 4 trillion Btu of heat per RRY into the environs. Most of this heat, about 80%, is rejected to the atmosphere at the power plants supplying electrical energy to the enrichment plant or at the enrichment plant itself.(*30*) Waste management and spent fuel storage contribute about 18% of the heat rejected to the environs. This heat results from the decay of radionuclides. The rejection of process heat from fuel cycle facilities accounts for the remaining 2% of the thermal effluent from the fuel cycle.

To determine the heat rejection by the fuel cycle over the model LWR lifetime, multiply the thermal effluent value per RRY by 30.

Environmental Effect: The thermal effluents related to the fuel cycle in support of a model 1,000-MWe LWR do not represent a significant impact. The thermal effluent of the fuel cycle is only about 8% of the heat dispersed to the environs by the model LWR.

5. Transportation.

The dose commitment to workers and the public related to the transport of nuclear materials in support of a model 1,000-MWe LWR is estimated to be about 2.5 person-rem per RRY.(*31*)

To determine the transportation dose commitment over the model LWR lifetime, multiply the dose commitment per RRY by 30.

Environmental Effect: The transportation dose commitment related to the fuel cycle in support of a model 1,000-MWe LWR does not represent a significant impact. Compared to natural background radiation, this dose commitment is small.

5. Occupational Exposure.

The occupational exposure value given in Table S–3 (22.6 person-rem) represents an upper exposure value related to reprocessing and waste management activities associated with the back end of the fuel cycle, if the model 1,000-MWe LWR is operated on the uranium-only recycle mode. Most of the occupational exposure attributable to the back end of the fuel cycle results from the variety of operations associated with reprocessing and related waste management activities involving the disposal of irradiated spent fuel. For comparison, the occupational exposure related to the back end of the once-through uranium fuel cycle is estimated to be 7 person-rem per RRY. The occupational exposure attributable to the entire uranium fuel cycle in support of a model 1,000-MWe LWR is estimated to be about 200 person-rem per RRY.(T332T1)

Environmental Effect. The occupational exposure attributable to the fuel cycle in support of a model 1,000-MWe LWR is acceptable. NRC regulations limit the permissible occupational exposure of any individual to 5 rem annually.

Section II—References

1. NUREG–0116, Sections 2.6 and 4.6.
2. Ibid., p. 4–109.
3. Ibid., p. 4–117.
4. Ibid., Section 4.4.
5. Ibid., p. 4–114.
6. Ibid., Section 2.5 and p. 4–100.
7. Ibid., Sections 2.2, 2.3, 2.4, 2.5, and 4.4.
8. Ibid., p. 4–114.
9. Federal Register, *44*, p. 45371.
10. WASH–1248, p. S–9.
11. Ibid., p. S–16.
12. Ibid., p. D–14.
13. Ibid., p. B–10.
14. Ibid., p. S–18.
15. U.S. Council on Environmental Quality, "the Seventh Annual Report," September 1976, Figures 11–27 and 11–28, pp. 238–239.
16. WASH–1248, p. S–18.
17. Ibid., p. B–9.
18. Ibid., p. C–4.
19. Ibid., pp. D–18, 19.
20. Ibid., p. E–3.
21. Ibid., p. E–3.
22. NUREG–0116, p. 4–109.
23. Ibid., pp. 4–110 and 4–115.
24. Ibid., p. 4–9
25. NUREG–0511, *Generic Environmental Statement on Uranium Milling*, April 1979.
26. NUREG–0116, p. 4–84, Table 4.16.
27. NUREG–0216, p. H–17, Table VII.
28. Ibid., p. H–18, Table VIII.
29. WASH–1248, p. S–24.
30. Ibid., p. S–24.
31. NUREG–0116, p. 4–150, Table 4.35.
32. NUREG–0216, p. I–2.

III. Calculated Population Dose Commitments and Health Effects of the Uranium Fuel Cycle

In the **Federal Register** notice promulgating the final fuel cycle rule (44 FR 45362), the Commission stated, in note 35, that one important issue to be addressed in the narrative is the question of the time period over which dose commitments from long-lived radioactive effluents should be evaluated. The Commission also

directed that the narrative address how dose commitment evaluations over extended periods of time might be performed and what their significance might be.

This portion of the narrative has been developed to meet the above Commission directive. Section A contains a discussion of the population dose commitments and health effects calculated to result from the radioisotope releases given in Table S-3 when integrated over 100 years.[a] Section B contains a discussion of the period of time that the waste in a federal repository may represent a significant potential hazard, the incremental radioisotope releases from the repository which might occur during that period, and the period of time for which calculations may provide meaningful information. Section C contains a discussion of how very long-term (thousands of years) dose commitments and health effects attributable to long-lived radioisotopes released to the environment might be calculated, and what the significance of the calculations might be.

A. *100-Year Environmental Dose Commitments.* In this discussion, the environmental models used to calculate the transport of released radioactivity to man and to estimate the potential somatic and genetic health effects are the models discussed in the GESMO Hearings.(*1*) The models have been described in some detail in Appendix C of NUREG–0216. Basically, the models account for the dispersion of radioactivity released in the environment, the bioaccumulation in food pathways, the uptake by man and the dose commitments resulting from that uptake. There are two types of population dose commitments calculated: the 50-year dose commitment from combined external exposure and internal dose resulting from the continued uptake of the radioisotopes released in a 1-year period, and the environmental dose commitment (EDC). The EDC represents the sum of the 50-year dose commitments for each year of a specified period following the release of a given quantity of radioactivity. It includes the dose from the release during the first year, as well as additional exposure from deposited and resuspended radioactivity and internal doses from biological uptake of radioactivity for the subsequent 49 years after the release.

In practice, it is impossible to estimate with precision the complete EDC for very long-lived nuclides, such as iodine-129 (17 million-year half-life), as there is no way to predict with any degree of certainty the many variables that affect such estimates so far into the future, e.g. the growth of human population, technological advances, the environmental behavior of long-lived radionuclides, and the occurrence of catastrophic climatic and geologic changes. (See Section C for a discussion of how long-term dose commitments might be calculated.)

NRC, EPA, and other agencies use a so-called imcomplete EDC. In GESMO,(*2*) the length of the incomplete EDC selected was 40 years for a total U.S. population of 250 million. Thus, 50-year population doses were calculated for each year of the 40-year exposure period and summed (i.e., the total length of time covered was 40+50, or 90 years). These calculations have been modified to extend the population dose integration period to 100 years, as recommended by the S–3 Hearing Board. Since each year's exposure is calculated for 50 years, the total time covered is 150 years. For the overall fuel cycle, the total body exposure is projected to be 550 person-rem/RRY for an assumed stable U.S. population of 300 million.

It should be noted that for tritium and krypton-85 (two of the major dose contributors), there is little difference between a 40-year and a 100-year EDC, since about 90% of both nuclides will decay within the first 40 years. Furthermore, much the same is true of most of the fission and activation products released from the nuclear fuel cycle (e.g., iodine-131, ruthenium-106, strontium-90, cesium-137). For this reason, increasing the length of the EDC from 40 to 100 years results in much less than a doubling of the estimated dose commitments and potential health effects; not much additional change would occur if the EDC were extended beyond the 100 years for most isotopes. However, for the very long-lived radioisotopes such as carbon-14 and iodine-129, among others, and the special case of 3.8-day radon-222 which continues to be formed by decay of long-lived parents, the EDCs continue to increase with time and the calculated health effects also continue to increase. (See Section C for a discussion of very long EDCs.)

In the area of health effects, it is possible that even the 40-year EDCs calculated for the S–3 hearings overestimated the impacts of the releases. The health effects models represent a linear extrapolation of effects observed at high dose rates (e.g., Japanese nuclear bomb survivors) to potential effects at low doses and low dose rates. In addition, the assumption is made that there is no dose below which effects cannot occur. It is believed that the use of such models, although useful for regulatory purposes, tends to overestimate the effects of exposure to low-level ionizing radiation. Most animal and cellular studies indicate reduced somatic and genetic effects as the doses or dose rates are reduced. At low doses and low dose rates, the effects per unit of radiation dose may decline due to cellular repair and other mechanisms.

The linear hypothesis, as the 1972 BEIR report indicated, in most cases probably overestimates, rather then underestimates, the risk from low-LET [b] radiation; and such estimates should not be regarded as more than upper limits of risk. In this regard, beyond mining and milling, the population dose commitment from the uranium fuel cycle results, for the most part, from the exposure of about 300 million people to very low doses of low-LET radiation. In general, the controversy about whether the risks related to high-LET radiation are understated pertains to the effects from exposure to neutrons and alpha particles, which are not significant to the back end of the uranium fuel cycle. The high-LET radiation from transuranic radionuclides in the uranium fuel cycle effluents contributes less than about 0.4% of the health effects attributable to the back end of the uranium fuel cycle.

The health risk estimators from the GESMO (*3*) studies are as follows: [c]

Total body dose: 135 cancer deaths per million person-rem; 258 genetic effects per million person-rem

Thyroid dose: 13.4 cancer deaths per million person-rem

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[a] WASH-1248 and Table S-3 did not address the question of population dose commitments or potential health effects. However, these topics were discussed in considerable detail in NUREGs–0116 and –0216 (Supplements 1 and 2 of WASH–1248). These reports present a detailed reevaluation of the "back end" of the uranium fuel cycle.

[b] Linear energy transfer.

[c] The conclusions in the S–3 narrative concerning potential biological effects are based on risk estimators in the BEIR I Report modified to reflect more recent radiobiological data in WASH-1400. The BEIR III, which reevaluates the risk estimators presented in BEIR I, recently has been published (July 1980). Although the NRC staff review is still under way, the range of risk estimators for low-level radiation presented in BEIR III appears to be essentially the same numerically or less than those presented in BEIR I for whole body exposures. However, in some cases the cancer risk estimators for specific organs in BEIR III appear to be different from (generally higher than) those in BEIR I, which were used in the S–3 narrative. Thus, cancer risk estimators for some specific organs could be underestimated in the S–3 narrative. However, since the bulk of the collective population doses from the uranium fuel cycle (excluding radon) are whole body exposures, the conclusions of this S–3 narrative would be changed only slightly, if at all, if the revised BEIR III risk estimators were to be used.

Lung dose: 22.2 cancer deaths per million person-rem
Bone dose: 6.9 cancer deaths per million person-rem

Although the risk of a genetic effect occurring is about twice that of a cancer death, most of the genetic effects (assumed to be occurring at the equilibrium rate) would not be fatal.[4]

Because there are higher dose commitments to certain organs (e.g., lung, bone, thyroid) than to the total body, the total risk of radiogenic cancer is not addressed by the total body dose commitment alone. By using the risk estimators presented above, it is possible to estimate the whole body equivalent dose commitments for certain organs. The sum of the whole body equivalent dose commitments from those organs was estimated to be about 100 person-rem. When added to the above value, the total 100-year environmental dose commitment would be about 650 person-rem/RRY.

In summary, the potential radiological impacts of the supporting fuel cycle (including fuel reprocessing and waste management but excluding radon emissions from mining and mill tailings) are as follows:

Total body person-rem/RRY: 550 (100-year dose commitment)
Risk equivalent person-rem/RRY: 650 (100-year dose commitment)*
Fatal cancers/RRY: 0.068
Genetic effects/RRY: 0.14

Thus, for example, if three light water reactor power plants were to be operated for 30 years each, the supporting fuel cycle would cause risk equivalent whole body population dose commitments of about 59,000 person-rem and a genetically significant dose commitment of about 50,000 person-rem, leading to estimates of 8 fatal cancers and 13 genetic effects in the U.S. population (300 million persons) over a period of 100 years. Some perspective can be added by comparing such estimates with "normal" cancer mortality for the same population. Assuming that future population characteristics (age distribution, cancer susceptibility, etc.) and competing risks of mortality remain the same as today, such projections would predict about 60 million cancer deaths from causes other than generation of nuclear power during the next 100 years. Assuming that the occurrence of genetic effects remains constant, projections would predict about 25 million genetic effects from causes other than generation of nuclear power during the next 100 years.

Using the lifetime risk estimate of 135 cancer deaths per 10^6 person-rem and averaging the 650 risk equivalent person-rem per RRY over the U.S. population of 300 million persons, the average lifetime individual risk in the United States from cancer mortality from radioactivity released from the supporting fuel cycle is about 3 chances in 10 billion per RRY. The average lifetime risk per person of cancer mortality from radioactivity released, excluding radon, from the uranium fuel cycle in support of all the currently projected and operating nuclear reactors, if operated for 30 years, is estimated to be less than 2 chances in 1 million. Assuming one RRY supplies electrical power for approximately a million persons and that all of the cancer risk is borne only by those users, the average lifetime risk to this population group would be about 9 chances in 100 million per RRY. This would also be the approximate average lifetime risk per person per RRY from the fuel cycle if all of the electricity used in the United States were produced by nuclear power plants. However, since nuclear power presently provides about 10% of the total electricity generated in the United States, the average lifetime risk per person in the United States would be about 9 chances in 1 billion per RRY.

In order to provide some perspectives on the risk of cancer mortality from the supporting fuel cycle, some mortality risks which are numerically about equal to 9 chances in 1 billion are as follows: a few puffs on a cigarette, a few sips of wine, driving the family car about 8 blocks, flying about 2 miles, canoeing for 3 seconds, or being a man aged 60 for 11 seconds.*(4)* Using electricity generated by any means for typical domestic use results in an average risk of 6×10^{-8} per year from accidental electrocution.*(5)* Thus, a lifetime risk of 9 in 1 billion would be equivalent to using electricity for about one half day.

Currently, the number of nuclear power reactors operating, being built, or tentatively planned in the United States totals about 190 which is estimated to provide a nuclear generating capacity in the United States of about 183,000 megawatts. The estimated potential upper-limit health effect risk from manmade radioactivity released to the environment from the uranium fuel cycle, beyond mining and milling, in support of the projected 30-year operation of all currently operating or planned nuclear reactors in the United States is as follows.

ESTIMATED RISKS OF CANCER AND GENETIC EFFECTS[1]

	100-Year EDC[2]		10,000-Year EDC[3]	
	Cancer Mortality	Incidence of Genetic Effects	Cancer Mortality	Incidence of Genetic Effects
Health Effect Risk, All Currently Operating or Planned Reactors	484	771	652	1155
Natural Occurrence (300 million population)	60×10^6	25×10^6	60×10^8	25×10^8
Percent Increase Over Natural	8×10^{-4}	3×10^{-3}	1.1×10^{-5}	4.6×10^{-5}

1 Excludes mining and milling radon effluents
2 Environmental Dose Commitment
3 Increase results primarily from long-life C-14 and I-129 effluents

*Corrections 46 FR 19946

* It requires about 5 generations for a genetic effect to closely approach equilibrium in a specific population.
* Includes dose commitments to other organs as well as whole body dose commitments.

Thus, for the currently projected U.S. nuclear power industry, the potential upper-limit cancer mortality risk estimates, estimated for a 100-year EDC and a 10,000-year EDC, excluding radon, are about 8×10^{-4} percent and about 1×10^{-3} percent respectively, of the potential occurrence of natural cancer mortality in the U.S. population over equivalent periods of time. The incremental difference in U.S. population dose due to the projected growth of nuclear power would average less than 1 mrad/person/year. According to the BEIR Committee, manmade radiation levels of 100 mrem/year can be regarded as comparable to other risks that are often accepted by the public.

It is believed that the estimated Table S–3 values and the dose and health effects models used by the NRC to develop the above estimates result in conservatively high projections. Therefore, they provide reasonable assurance that the radiological effects resulting from the releases in Table S–3 (as presented in NUREGs-0116 and -0216) have not been underestimated.

B. *Potential Long-Term Effects of Waste Disposal.* NUREG-0116, Environmental Survey of the Reprocessing and Waste Management Portions of the LWR Fuel Cycle, contained estimates of the short-term impacts from waste disposal operations (i.e., those impacts that could result from the waste disposal operation during their operating life). Although NUREG-0116 and NUREG-0216 contained data on potential long-term risks from escape of radionuclides from a repository*(6)* and from low-level waste disposal operations,*(7)* no entries were made in Table S–3 for these potential releases because they were judged to be too small to be of significance.

The staff has reviewed the long-term effects of low-level waste disposal and TRU and high-level waste or spent fuel disposal for both of the two fuel cycles covered by the present proceeding—once-through and uranium-only recycle. The potential effects resulting from long-term releases of low-level waste have been addressed in NUREG-0216,*(8)* and no additional consideration of the potential effects of disposal of these types of wastes is believed to be necessary. Moreover, since it has been assumed that TRU wastes will be disposed of in a repository along with high-level wastes, there is no explicit discussion of TRU wastes because the TRU wastes are considered to be part of the high-level waste.

The wastes from the once-through and uranium-only fuel cycles that will be disposed of in federal repositories differ from one another in several ways as noted below:

• Waste Form—The dominant amount of radioactive waste from the once-through fuel cycle is in the form of spent fuel assemblies, with the fission products and actinides in a UO_2 matrix; while the dominant waste from the uranium-only fuel cycle will be solidified high-level, plutonium, and TRU waste. The latter will be in the form of solids having properties engineered to reduce mobility of fission products and actinides. The NRC cannot at this time describe in any detail the variations in the properties (in terms of better long-term retention of fission products and actinides) of one type of waste form from the other. Hence, for this discussion, the various forms of solid waste have been assumed to have similar nuclide-retention properties.

• Radionuclide Content—The spent fuel contains all of the nonvolatile fission products, transuranic elements, and activation products produced in the course of its irradiation, as well as all the residual uranium. Similarly, the high-level wastes in combination with the plutonium and any TRU wastes from the uranium-only fuel cycle contain essentially all of the nonvolatile fission products, transuranic elements, and activation products produced in the fuel in the course of irradiation. The main difference between the spent fuel and the wastes from uranium-only recycle is that the wastes from the latter contain only 2–5% of the residual uranium. Thus, on a broad comparative basis, since all other nuclides are present in about equal amounts in both wastes, the spent fuel represents a slightly greater long-term risk because of its larger uranium content.

Since all solidified wastes have been assumed for this study to have equivalent nuclide retention properties, and since spent fuel represents the greater long-term risk, the following discussion is based on spent fuel.

The potential effects from long-term releases of radioisotopes from a repository require the consideration of two basic issues:

• over what period of time does the waste represent a significant potential hazard, and

• given the state-of-the-art of modeling transport of radionuclides, do calculations provide meaningful information over that period of time?

One way to address the question of time over which the spent fuel in the repository represents a significant hazard is to assess the net potential impact of the disposal of the waste relative to the potential impacts if the charge to the reactors (fresh fuel) had remained in the ore body. For this assessment it is assumed that an engineered system, including waste from packaging, and the repository, can be expected to confine (isolate) radioactive waste materials at least as well as an isolated ore body. This assumption is believed to be reasonable, based upon the following observations. Ore deposits were located in various geologic settings by natural phenomena and some may be in contact with groundwater, in soils with only moderate retardation of solute movement, and with varying ion travel distances to the biosphere. A repository, on the other hand, will be located in a hydrogeologic setting purposely selected to have no known or prospective contact with circulating groundwater, high retardation of solute movement, and long ion travel distances to the biosphere. In addition, the repository system, including waste form and packaging, will also include engineered features which are intended to prevent or greatly slow the release of the waste to the host media.

For waste placed in a repository system to reach the bisophere, one of two types of events must occur. The first involves essentially commonplace occurrences and requires: (1) water to infiltrate the repository; (2) the waste container to corrode; and (3) radionuclides to leach form the waste from. Long-lived radionuclides will eventually reach the biosphere by migration of leached radionuclides with the movement of groundwater to a discharge point or to a well. This type of event could expose man to radioactive materials via food chains or other environmental pathways. The second type of event involves unusual occurrences, such as disruption of the repository by man or natural events, which released radionuclides to the biosphere. However, sites for waste repositories will be selected in areas where the probability that a natural event would disturb the repository is extremely low and located away from identified natural resources to minimize the probability that man would accidentally disturb the repository. An analysis of the consequences of a meteorite strike of the repository, an extraordinary event that would be classified as coming under scenario two, has been given in NUREG–0116.*(9)* Thus, the analysis here considers primarily the probability of waste reaching the biosphere under the conditions of scenario one.

In the event water infiltrated the repository, it would take a long time for any of the leached radionuclides to be transported to the biosphere by groundwater migration. Movement of groundwater is itself slow, and retarding mechanisms such as ion exchange increase the travel time for most radionuclides such that it might take tens to hundreds of thousands of years

for them to reach the biosphere.(*10*) In this period of time, most radioactive material will have decayed away before it could reach the biosphere. On the other hand, fission products carbon-14, technetium-99, and iodine-129 have a combination of low retardation by ion exchange in soil and long lives. Accordingly, if these radionuclides were leached from wastes by infiltrating water, they could reach the biosphere in relatively small concentrations over a rather long time period. However, in developing the source terms for Table S–3, it was assumed that carbon-14 and iodine-129 were released to the biosphere before the waste was sent to the repository. While not the actual case with respect to the disposal of spent fuel from the once-through fuel cycle, for the purpose of the S–3 rule, this assumption bounds the upper limits relevant to releases of carbon-14 and iodine-129 from the uranium fuel cycle. Technetium can exist in several oxide forms. Under the conditions expected for groundwaters not in contact with the atmosphere, insoluble TcO_2 or related hydrated forms should be the solubility-controlling phases, and the concentrations of technetium in migrating groundwater should be extremely low. However, the oxidation conditions are difficult to predict due to the effects of construction of the repository and due to waste-rock interactions. Therefore, technetium has been considered to be present as the pertechnetate oxyanion (TcO_4) which is assumed to migrate to the biosphere with the groundwater.

To determine the time period over which spent fuel might be deemed a significant hazard, we have compared its dilution index with that of unirradiated uranium fuel. The dilution index is a measure of the amount of water required to dilute the concentration of radionuclides to the limits of 10 CFR Part 20 for unrestricted release, which can be used to compare the consequences of ingestion of radioactive materials. From Figure 3, it can be seen that in spent fuel the fission products dominate the dilution index up to about 200 years from reactor discharge. Beyond 200 years to about 50,000 years, the transuranic radionuclides and their daughters dominate the dilution index, and beyond 100,000 years, uranium and its daughters dominate the dilution index. From Figure 4, it can be seen that the growth of uranium daughters radium and lead dominate the dilution index for aged unirradiated uranium fuel, such that by about 100,000 years, the dilution indexes for both spent fuel and unirradiated uranium fuel are about the same, both being dominated by uranium and its daughters. Thus, without consideration of dispersion or retardation relative to groundwater transport time, at about 100,000 years the dilution index of the waste in a repository is about the same as aged unirradiated uranium fuel. Moreover, since plutonium and americium have long delay times during transport from the repository to the environment, the dilution index of those materials in the waste that could potentially be released is about the same as aged unirradiated fuel after 10,000 years.

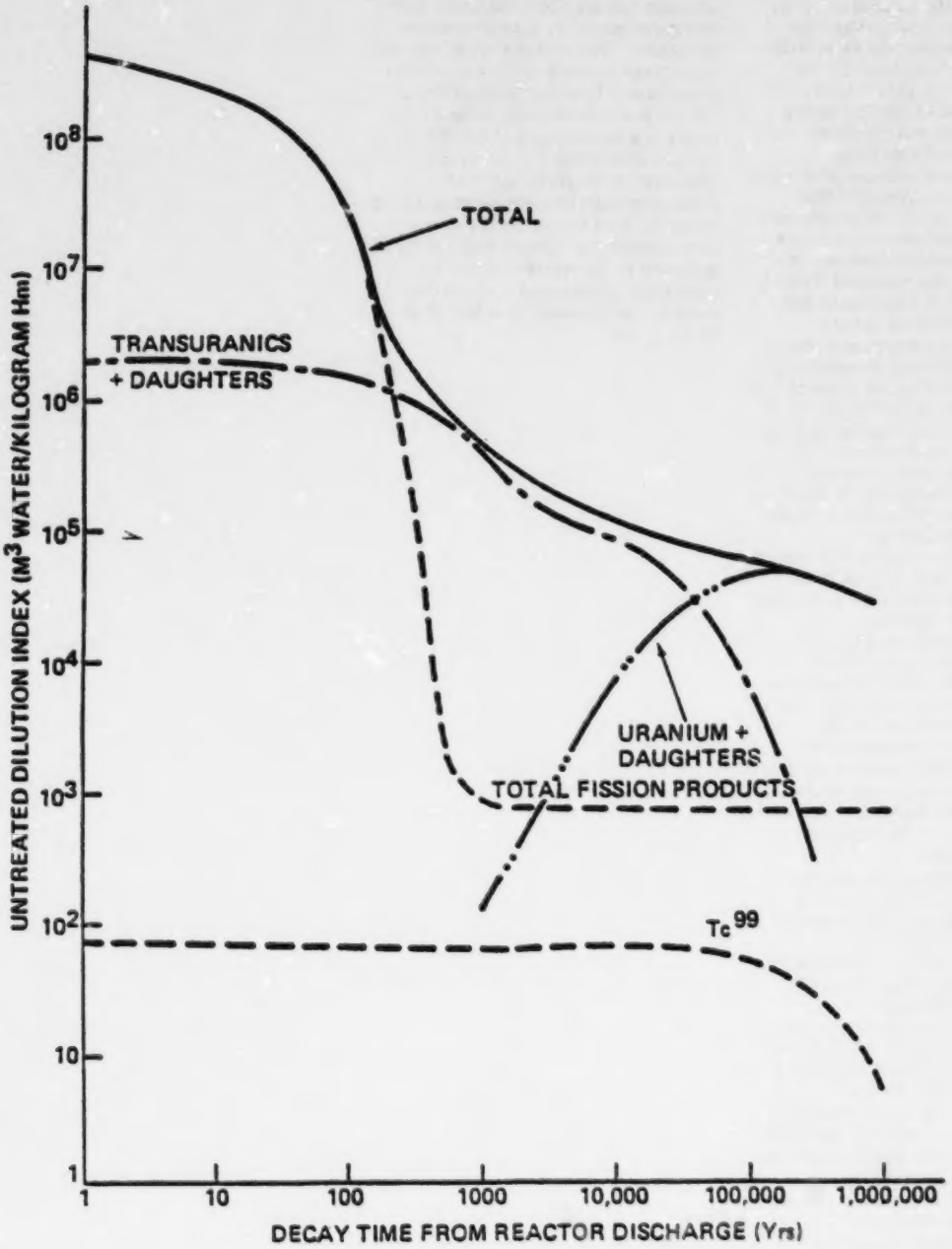

Figure 3 Dilution Index for Spent Uranium Fuel.

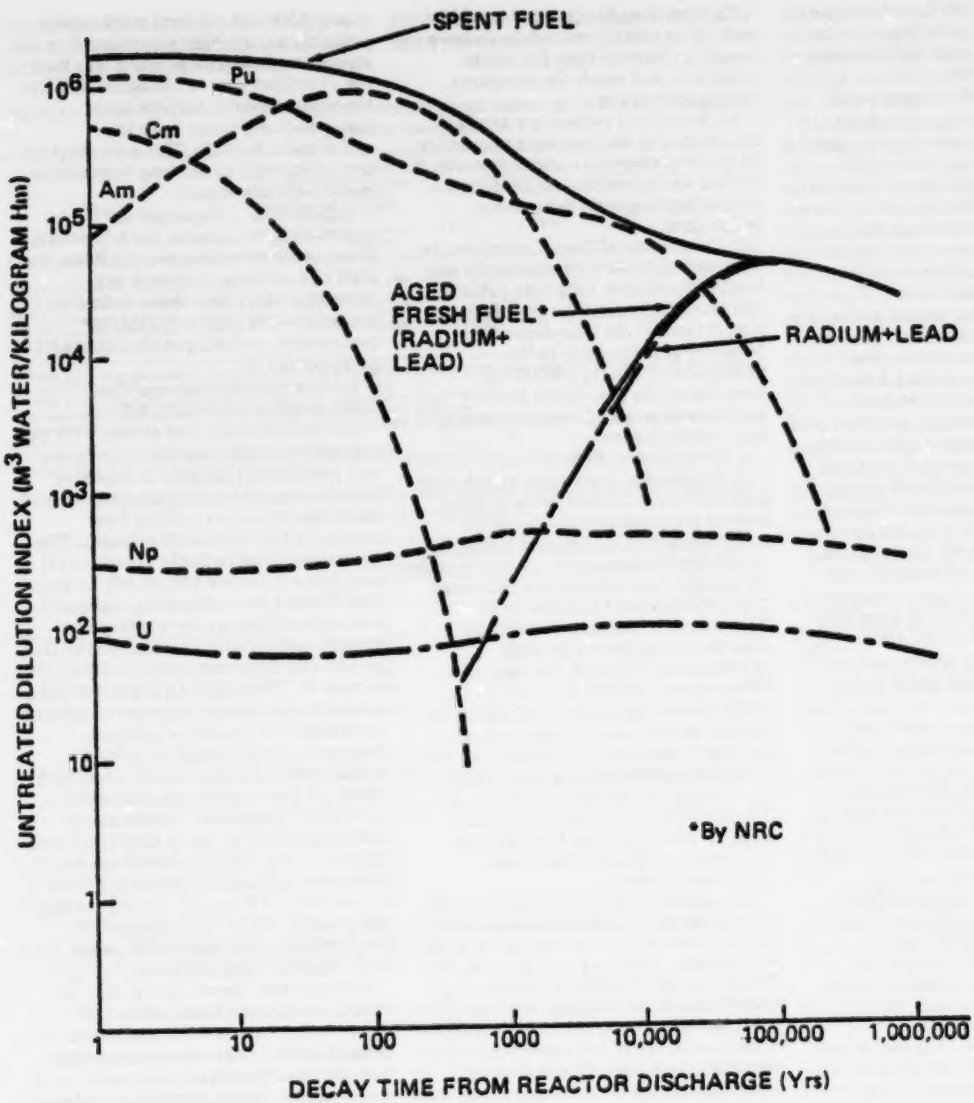

FIGURE 4 Dilution Index for Actinides and Daughters in Spent and Aged Fresh Uranium Fuel

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Thus the answer to the previously posed questions concerning the potential long-term effects of waste repositories may be framed as follows:

1. For natural-type releases from a repository, significant net potential impacts of spend fuel relative to aged fresh fuel exist for less than 10,000 years. In natural-type releases, there is a long time delay (10^4-10^5 years) between the time the nuclide (or its parent) leaves the repository and reaches the biosphere. The net impact of such releases can be conservatively (high side) approximated by assuming the complete release of the technetium-99. Given the number of conservative assumptions required to model the releases from a repository under natural-type circumstances and the small potential net impact after 10,000 years, calculating releases for natural-type conditions beyond 10,000 years provides little meaningful information.

2. If disturbances of a repository which could result in the direct release of significant quantities of otherwise immobile isotopes are being considered (well-digging), significant net potential hazards could persist for 100,000 years. The impacts from the disturbance would depend on the time and nature of the action.

C. *Dose Commitments and Health Effects from Long-Lived Radioisotopes Released from the Uranium Fuel Cycles.* The Commission directed the staff to discuss the time period over which dose commitments should be evaluated, how the dose commitment evaluations over extended periods of time might be evaluated, and what their significance might be. In Section A, page 38, it was shown that a 100-year EDC was adequate to provide the total dose commitment from most isotopes. Very long-time EDCs are necessary if the complete environmental dose commitments from fuel cycle emissions such as carbon-14 and iodine-129 are to be determined. In addition to these isotopes, the analysis given in Section B showed that a very conservative evaluation of long-term emissions from a repository would show technetium-99 could be released from a repository. Applicable released for these isotopes are:

Carbon-124—24 Ci/RRY
Iodine-129—1.3 Ci/RRY
Technetium-99—upper bound for long-term releases from the repository is 500 Ci/RRY, 100% of the technetium in fuel.[1]

[1] Environmental Standards being developed by EPA and regulations being developed by NRC are expected to require reasonable assurance that release of Tc-99 are a small fraction of this quantity.

Carbon-14 and iodine-129 would be emitted as volatile materials; technetium would be leached from the waste repository and reach the biosphere dissolved in water.

Mathematical models are available for estimating the long-term population doses from carbon-14 and iodine-129. No models are currently available for estimating long-term doses from technetium.

1. Calculation of Dose Commitments.

To calculate dose commitments and health effects over long time periods, one must: (a) predict the population at risk; (b) model the time-dependent behavior of the nuclide in the environment; and (c) predict the response of the population to the exposure in terms of cancer mortality and genetic defects.

a. Population at Risk.

In considering population at risk over time periods of 100,000 years or more, several gross assumptions must be made. Realistically, geologic history would predict several catastrophes such as ice ages (as many as 10 might occur over 250,000 years) (*11*) and large fluctuations in population might be expected to be caused by such catastrophes. The staff, for want of a better rationalization, has assumed a stable world population of 10 billion for the first 10,000 years of expsoure, with periodic variations of population of from 2 billion to 10 billion as a function of time beyond 10,000 years. Further, the U.S. population was assumed to be a constant 3% of the world population.

b. Models of Nuclide Behavior.

(1) Carbon-14.

The GESMO and S–3 hearing records do not contain a model that adequately predicts the behavior of carbon-14 in the environment over long time periods. The GESMO model (RABGAD) can be used to estimate the dose commitment to the U.S. population from the initial passage of carbon-14 before it mixes in the world's carbon pool. The carbon-14 model developed by Killough (*12*) can be modified, using the population variations given above, to obtain long-term dose commitments.

(2) Iodine-129. Appendix C, Section 3.0 of NUREG-0216 provides an adequate model for estimating long-term population doses from iodine-129. The GESMO model (RABGAD) can be used for estimating the U.S. population dose resulting from the initial passage of the iodine-129 prior to mixing in the world pool of stable iodine. For the long term, the model assumed for the S–3 hearings results in 1.1×10^{-13} rem/year/Ci to each person in the world after the mixing occurs, with the annual dose-rate declining with a half-life of 17 million years. Although removal mechanisms probably exist which would result in an environmental half-life much less than the 17 million year radiological half-life, the environmental half-life was conservatively taken to be the radiological half-life. This conservatism is prudent until better long-term iodine models are developed.

c. Response to Exposure. In considering response of the population to exposure to radioactive nuclides, the staff has no basis to choose any responses other than those estimated currently—135 cancer deaths/10^6 person-rem, and 258 genetic defects/10^6 person-rem.(*13*)

2. Numerical Estimates of Dose Commitments and Health Effects.

The models described above, with the assumptions delineated for population and population response to exposure have been used to calculate long-term dose commitments resulting from carbon-14 and iodine-129 releases. The values are given in Table I (carbon-14) and Table II (iodine-129). It can be seen from Table I that integrating carbon-14 dose commitments over 10,000 years captures essentially the total potential person-rem dose commitments from carbon-14. These data indicate that the total U.S. population exposure to infinity is perhaps 3–4 times the first-pass exposure and the potential infinite world population exposure is perhaps 8 times the first-pass world population exposure. Cumulative excess cancer mortalities/RRY of about 0.06 (U.S.) and 1 (world) might be predicted from the carbon-14 releases. A cumulative total of about 0.1 (U.S.) and 3 (world) genetic defects/RRY would be predicted to result over a period of 100,000 years from the carbon-14 released.

It can be seen from Table II that the dose commitments from iodine-129 continue to increase with time, even beyond 250,000 years. Since the model does not incorporate any removal mechanism other than radioactive decay (17 million year half-life), the calculations could, in theory, be extended to 200 million years or so to capture the total dose commitments of iodine-129. This has not been done for the present treatment. (A discussion of the significance of long-time calculations is given in Section 3. below.)

The data in Table II show that the 250,000-year dose commitments (whole body risk equivalent) from iodine-129 (76 U.S. and 1,250 world person-rem/RRY) are about 12 to 16% of the 100,000-year (infinite) dose commitments from carbon-14 (430 U.S. and 10,600 world person-rem/RRY). Cumulative excess

cancer mortalities/RRY for a 250,000-year exposure are about 0.01 (U.S.) and 0.17 (world); cumulative genetic defects/RRY (250,000-year) are about 0.002 (U.S.) and 0.035 (world).

Table I.—*Population Dose Commitments and Potential Health Effects for 24 Ci/RRY Release of C-14 From the Fuel Cycle*

Time (years)	Cumulative person-rem (T.B. risk equivalent*) and cumulative genetically significant dose (organ-rem)		Cumulative cancer mortality		Cumulative genetic defects	
	U.S.**	World**	U.S.	World	U.S.	World
100	130	790	0.02	0.1	0.03	0.2
1,000	170	+1,200	0.02	0.3	0.04	0.5
10,000	360	+8,900	0.05	1.2	0.10	2.3
100,000	430	++10,600	0.06	1.4	0.11	2.7
250,000	430	++10,600	0.06	1.4	0.11	2.7

*Total body dose equivalent is the sum of the total body dose and each organ dose multiplied by the ratio of the mortality risk per organ-rem to the mortality risk per person-rem total body.
**First Pass Dose = 127 person-rem (total body risk equivalent) or organ-rem.
†Based on approximation to Killough's C-14 model (ORNL-5269) as follows:
person-rem/Ci F (t) = [28 + 582 (1 − e^−t/5730 years)]·[assumed world population of *) billion/Killough population of 12.21 billion]
††Based on approximation to Killough's C-14 model as follows:
person-rem/Ci F(t) = [10/12.21]·[441 + 179 (1 − e^−t/5730 years)]·[5.2 billion avg./12.21 billion]

Table II.—*Population Dose Commitments and Potential Health Effects for 1.3 Ci/RRY Release of I-129 From a HLW Repository*

Time (years)	Cumulative person-rem (total body risk equivalent)*		Cumulative genetically significant population dose (organ-rem)	
	U.S.**	World**	U.S.***	World***
100	40	41	4.4	4.5
1,000	40	49	4.4	5.4
10,000	43	130	4.7	14.8
100,000	55	524	6.0	57.8
250,000	76	1,250	8.4	137

	Cumulative cancer mortality		Cumulative genetic effects	
	U.S.	World	U.S.	World
100	0.0054	0.0055	0.0011	0.0012
1,000	0.0054	0.0066	0.0011	0.0014
10,000	0.0058	0.018	0.0012	0.0038
100,000	0.0074	0.071	0.0015	0.015
250,000	0.01	0.17	0.0022	0.035

*Total body dose equivalent is the sum of the total body dose and each organ dose multiplied by the ratio of the mortality risk per organ-rem to the mortality risk per person-rem (total body).
**First Pass Dose = 31 person-rem whole body risk equivalent.
***First Pass Organ Dose 4.4 organ-rem (gonads).

3. The Significance of Long-Term Dose Commitments.

In the above section, at the direction of the Commission, the staff has provided theoretical mathematical calculations for dose commitments and health effects of carbon-14 and iodine-129 for up to 250,000 years. In order to perform these calculations, the staff has had to make a series of assumptions based upon little foundation and in which it has little or no confidence. Because of the shortness of human life expectancy relative to the much slower changes occurring on earth, such as variations in climate, continental drift, erosion, and evolution of species, it is difficult to comprehend the immensity of potential changes over long periods of time.

For comparatively short-lived isotopes, dose commitment integrations can be projected for what amounts to infinite time intervals. For example, an infinite time integration of population dose can be done for tritium or krypton-85 since such time integration effectively requires consideration of a period of about 100 years or less. However, projecting population at risk, and population response to risk over even such relatively short time intervals requires many assumptions which the staff has reason to question. It is possible for example, to reasonably postulate the following occurrences during the next 100 years: major changes in the size of the population at risk because of war or global starvation; important medical developments; the onset of the "greenhouse" effect; the depletion of oil, natural gas, and mineral resources. Any of these occurrences may have significant effects on worldwide conditions and affect the validity of calculated dose commitments and related health effects.

The staff is unable to make any definitive statements about the possible variations in the long-term dose commitments and health effects resulting from potential future happenings. However, the staff believes that the cumulative combined impacts from long-lived radionuclides such as carbon-14 and iodine-129 are small relative to those from natural background radiation, which is about 100,000 billion person-rem (world) over a 250,000 year total, i.e., less than about 10^{-7} percent of those impacts resulting from natural background radiation.

Section III—References

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3. Ibid., Chapter IV-J, Appendix B, page IV-J (B)-1.
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6. NUREG-0116, page 4-94 ff.
7. NUREG-0216, Appendix H, page H-16 ff.
8. Ibid.
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12. Killough, G. G., "A Diffusion-Type Model of the Global Carbon Cycle for the Estimation of Dose to the World Population from Releases of Carbon-14 to Atmosphere," ORNL-5269, May 1977.
13. NUREG-0002, Chapter II-J, Appendix B.

Section IV. Socioeconomic Impacts

Socioeconomic impacts of the uranium fuel cycle can result from increases in levels of employment and public services requirements. Because the topic is so broadly defined, it is desirable to approach it as a series of interrelated subcategories. Briefly, these consist of:

• Population—changes in population resulting from the influx of workers and their families at both the construction and operation stages of facilities.

• Economy—induced changes in income and expenditures, including demands for services, both public and private.

While this factor was not discussed in WASH–1248, it was briefly covered in the remanded hearing (Docket No. RM 50–3) on the back end of the fuel cycle, and the following discussion is based on the record of that proceeding.

For the nuclear fuel cycle, population and economic data can be obtained at each stage from mining, milling, and fuel fabrication through waste isolation. The tabulation of conventional socioeconomic impacts at each stage can provide a generic measure of the conventional socioeconomic impacts associated with the entire fuel cycle.

For each stage of the fuel cycle, the character and magnitude of the socioeconomic impacts are site-specific and are determined by the size of the work force, the size of the local populations, the number of incoming workers in relation to the population size, the capacities of public service facilities impacted, the administrative capability of the impacted political jurisdictions, and other related factors. The size of work forces needed for reprocessing plants and waste-related facilities suggests that socioeconomic impacts should be manageable through proper planning and mitigative efforts. In fact, the socioeconomic effects of establishing reprocessing plants and waste-related facilities are not expected to differ in quantity or quality from those associated with any commercial nuclear power plant. The socioeconomic considerations can be summarized as follows:

Impacts that can be expected are comparable to or less than those caused by LWR construction activities and could include noise and dust around the site; disruptions or dislocations of residences or businesses; physical or public-access impacts on historic, cultural, and natural features; impacts on public services such as education, utilities, the road system, recreation, public health and safety; increased tax revenues in jurisdictions where facilities are located; increased local expenditures for services and materials, and social stresses. *(1)*

With respect to the socioeconomic impacts that may be attributable to reprocessing facilities, NUREG–0116 *(2)* cites TVA information showing the anticipated socioeconomic impacts associated with the construction of an LWR are representative of those socioeconomic impacts which can be expected from construction and operation of a reprocessing facility.

Since a 2,000-metric-ton reprocessing plant (the size of the model reprocessing plant) is capable of servicing 57 reactors annually, the socioeconomic impacts from construction of a reprocessing plant attributable to a single reactor can be approximated as less than 2% of those of the reactor.

With respect to the socioeconomic impacts which can be attributed to a high-level waste repository (HLWR), commercial nuclear power plant information was utilized to illustrate the anticipated impacts. The anticipated impacts can be expected to vary depending upon the location of the repository and the size of the surrounding communities.

Preliminary estimates of the construction labor force, developed by the Office of Waste Isolation at Oak Ridge National Laboratory, show a peak number of 800 people, in contrast to the average LWR work force of 2,000. The anticipated socioeconomic impacts of high-level waste repository construction thus could be expected to be less than those of construction of an LWR. Since the proposed repository has the capability of servicing a total of 133 reactors, and can store fuel from 40 reactors (based on 1,200 RRYs over 30 years of operation), the socioeconomic impacts resulting from construction of the repository, when allocated to a single reactor, would be only a few percent of the socioeconomic impact of constructing the reactor.

In terms of operating work force, preliminary estimates developed at the Office of Waste Isolation at ORNL set the number of peak labor force for a high-level waste repository at 1,630, about 10 times that of an LWR work force (170).

An added 1,630 workers to a rural employment base would mean a change in the economy of the area. If the pattern followed the experience of large industrial plants locating in small towns, the following observations could be expected to apply:*(3)*

1. Rural industrial development seldom produces an unmanageable population growth rate; it provides a stabilizing influence on population;

2. There is a tendency for long distance commuting, which tends to spread out impacts on community facilities;

3. Housing would be a common problem in rural areas.

If the settlement pattern were very concentrated, the impacts on community facilities and housing could be expected to be larger. It is believed that the lead times will be sufficient to allow the potentially impacted communities and the applicant to develop mitigative programs which would allow for an orderly and manageable resolution of potential socioeconomic impacts.

Should the repository be located within a relatively easy commuting distance, it is believed that the surrounding communities should be able to absorb the 1,630 workers with fewer impacts occurring and be able to resolve any potential impacts requiring mitigation in advance of the operation phase.

Based upon these assessments of socioeconomic considerations associated with the construction and operation of reprocessing and waste burial facilities, it was concluded that when they are spread over many power reactors, they add an insignificant amount to the environmental impacts of an individual reactor. Thus, no specific value for socioeconomic considerations was placed in Table S–3.

In its effort to update Table S–3, the Commission is performing socioeconomic studies which are intended to provide more detailed data on the impacts actually experienced as a result of construction and operation of the facilities involved in each step of the nuclear fuel cycle. The studies may provide information that will permit an incremental assessment of socioeconomic impacts attributed to the fuel cycle activities.

Section IV—References

1. NUREG–0116, Section 4.11.4, p. 4–168.
2. Ibid, p. 4–170.
3. U.S. Nuclear Regulatory Commission, Policy Research Associates, "Socioeconomic Impacts: Nuclear Power Station Siting," NUREG-0150, June 1977.

Regulatory Flexibility Statement

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. This proposed rule affects only the licensing and operation of nuclear power plants that do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act 5 U.S.C. 601 or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121. Since these companies are dominant in their service areas, this proposed rule does not fall within the purview of the Act. Furthermore, the notice of proposed rulemaking contains a narrative explanation of Table S–3 and does not impose additional requirements.

(Secs. 161(b) and (i), Pub. L. 83–703, 68 Stat. 948, 949 (42 U.S.C. 2201(b), (i)); Sec. 170, Pub.

L. 85–256, 71 Stat. 576, Pub. L. 94–197, 89 Stat. 1111 (42 U.S.C. 2210) Sec. 201, Pub. L. 93–438, as amended, 88 Stat. 1242, 89 Stat. 413 (42 U.S.C. 5841)).

Commissioner Bradford dissents from portions of this rule. His separate views and additional views of Chairman Ahearne are attached.

Dated at Washington, DC this 23rd day of February, 1981.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

Separate Views of Commissioner Bradford on the S–3 Narrative

The Commission was given four possible methods of dealing with environmental effects arising from the back-end of the fuel cycle:

1. The narrative is to be included in the draft and final EIS, either directly or by reference, purely as a matter of information to the public and the licensing board. There are no restrictions on the board's power to receive or require additional material on significance of the S–3 impacts and to weigh these impacts in the reactor cost-benefit balance as it sees fit, based on the record compiled in the proceeding.

2. As in option 1, except that the board could not require from the staff or applicant additional information beyond that contained in the narrative, i.e., the narrative would be deemed sufficient consideration of the environmental significance of the S–3 impacts. But supplementation by the parties would not be precluded.

3. No further discussion of fuel cycle impacts addressed by the table and the narrative would be required or allowed. The licensing board would factor fuel cycle impacts into the cost-benefit balance based on the material in Table S–3 and the narrative.

4. No further consideration of fuel cycle impacts addressed by the table and the narrative would be required or allowed in individual licensing proceedings. Table S–3 and the material in the narrative would be referenced as support for a generic conclusion that these fuel cycle impacts cannot affect significantly the cost-benefit balance for a reactor.

The Commission chose Option #4.

I do not agree with the Commission's proposal to prohibit consideration of fuel cycle impacts in individual license proceedings. By this proposal the Commission is finding as a matter of law that the deaths which may be caused by the fuel cycle may not be considered in a federal decision on whether or not to license a plant. The narrative itself estimates these possible deaths to number 484 over 150 years for the back-end of the fuel cycle associatd with 190 currently projected reactors. This finding means that if a viable alternative, which was not expected to kill, were otherwise equal on a cost-benefit basis with a reactor, the Commission would ignore the alternative's lack of human casualties. The only rational basis for the Commission s view is the assumption that the back-end of the nuclear fuel cycle does not kill as many persons as other alternatives. However, in adopting this proposal, the Commission has made no study whatsoever to support this assumption. Accordingly, I would not find fuel cycle impacts insignificant as a matter of law. While I recognize that the effects may be acceptable in comparison with alternatives, I would leave the significance question to the Boards in the first instance, as in opinion No. 1.

As a final matter, the narrative should deal with worldwide impacts. It should also acknowledge that the additional of the front end of the fuel cycle (Radon 222) to the narrative might increase the fatal cancer risk by two times for a 100-year environmental dose commitment and 200 times for the 10,000-year environmental dose commitment. I am surprised that I should have to make this point separately, but the Commission has expressly refused to include it.

Additional Views of Chairman Ahearne on the S–3 Narrative

The Commission in promulgating Table S–3 and the narrative has made a generic determination of the impacts of the back end of the fuel cycle. Thus it appears appropriate for the Commission, as opposed to individual licensing boards, to decide how these impacts affect the cost-benefit balance for a reactor. To allow the individual licensing boards to address the significance of the S–3 impacts defeats the purpose of issuing a generic rule.

In deciding that these fuel cycle impacts cannot affect the cost-benefit balance, I have considered the impacts presented in the narrative. As Commissioner Bradford notes in his separate views, the narrative estimates that the back end of the fuel cycle associated with the 190 currently projected reactors may cause 484 deaths over 150 years. From a different perspective, this means that the back end of the fuel cycle for each individual reactor may cause less than 3 deaths over 150 years. Given the magnitude of the impacts from other parts of the fuel cycle and the uncertainties associated with estimating the impacts of the total fuel cycle, it is impossible for such a relatively small impact to significantly affect the cost-benefit balance of a reactor. In any event, the Commission could reassess its position if future data indicate that the impacts are different from the current estimates.

As Commissioner Bradford notes, the Commission has not addressed the potential impacts of radon in the narrative. Radon is also not included in Table S–3 since the Commission has yet to make a generic determination of the impacts of radon. The value of radon and an appraisal of its impacts are being considered in individual reactor proceedings. Thus, until the Commission decides the value for radon emission, it is inappropriate for the Commission to discuss the generic impacts in the narrative and preempt the individual licensing discussions.

46 FR 19946
Published 4/2/81

10 CFR Part 51

Appendix A, Narrative Explanation of Table S–3, Uranium Fuel Cycle Environmental Data

Corrections

In FR Doc. 81–6525 appearing on page 15154 in the issue of Wednesday, March 4, 1981; on page 15167, second column, sixteenth line from the bottom, "* * * 8×10^{4} * * *" should read "* * * 8×10^{-4} * * *", and in the fifteenth line from the bottom, "1×10^{5} * * *", should read "* * * 1×10^{-5} * * *"

Also in the table, the entries in columns one, two, and four for "Percent Increase Over Natural" should read "8×10^{-4}, 3×10^{-3}, and 4.6×10^{-5}" respectively.

48 FR 22730
Published 5/20/83
Comments should be filed with the Commission's Secretary not later than 7/5/83. Comments received after this date will be considered if it is practicable to do so, but assurance of consideration cannot be given except as to comments received on or before that date.

Requirements for Licensee Actions Regarding the Disposition of Spent Fuel Upon Expiration of the Reactors' Operating Licenses

See Part 50 Proposed Rulemaking

48 FR 50746
Published 11/3/83
Comments should be filed with the Commission's Secretary not later than 12/6/83. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received before this date.

Reopening of Comment Period on Limited Proposed Rule

See Part 50 Proposed Rule Making

50 FR 5600
Published 2/11/85
Comment period expires 5/13/85

Decommissioning Criteria for Nuclear Facilities

See Part 30 Proposed Rule Making

50 FR 13797
Published 4/8/85
Comment period expires 7/8/85

Licenses and Radiation Safety Requirements for Well-Logging Operations

See Part 39 Proposed Rule Making

PART 51

LICENSING AND REGULATORY POLICY AND PROCEDURES FOR ENVIRONMENTAL PROTECTION

PETITIONS FOR RULE MAKING

41 FR 2448
Published 1/16/76
Comment period expires 3/16/76
(extended to 4/26/76)
Partial denial published 4/14/76

[Docket No. PRM-51-1]

NEW ENGLAND COALITION ON NUCLEAR POLLUTION

Filing of Petition for Rule Making

Notice is hereby given that Roisman, Kessler, and Cashdan, 1712 N Street, NW., Washington, D.C., has filed with the Nuclear Regulatory Commission a petition for rule making dated November 19, 1975, on behalf of the New England Coalition on Nuclear Pollution.

The petitioner's request the Commission to issue a number of amendments to "Table S-3.—Summary of environmental considerations for uranium fuel cycle" in the Commission's regulation "Licensing and Regulatory Policy and Procedures for Environmental Protection," 10 CFR Part 51. The text of the amendments to Table S-3 proposed by the petitioners is set out in Appendix A to the petition. Appended also is a supporting affidavit and two reports by Professor Robert O. Pohl of the Department of Physics, Cornell University.

The petitioners state that the current Table S-3 seriously understates the impact on human safety and health by disregarding the long-term effects of certain long-lived radionuclides. The petitioners also express the opinion that Table S-3, by the exclusive use of the term "man-rems", does not provide a meaningful representation of these health effects, at least in the case of the radionuclides involved in this petition, and that human deaths from man-rem exposures provide a more easily comprehended consequence of the fuel cycle activities.

It is the further view of petitioners that the health effects of uranium mining and milling, now calculated in Table S-3 as a total of 0.06 man-rems within five miles of the plant per annual fuel requirement, fails to disclose the long-term and long-range health effects of the radon gas released from the tailings piles.

The petitioners state that the health effects of tritium and krypton-85 releases from fuel reprocessing plants are understated in Table S-3, and releases of carbon-14 should be included in Table S-3.

The petitioners also state that the magnitude of the potential death toll from mine tailings alone is so great as to alter the previous judgments on these matters and to require at a minimum a reassessment of previous conclusions to authorize construction or operation of nuclear reactors and a postponement of resolution of all pending applications for construction or operating authority until final resolution of this issue by the Commission.

A copy of the petition for rule making is available for public inspection in the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. A copy of the petition may be obtained by writing the Division of Rules and Records at the below address.

All interested persons who desire to submit written comments or suggestions concerning the petition for rule making should send their comments to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, on or before March 16, 1976.

41 FR 12365
Published 3/25/76
Comment Period extended to 4/26/76

[Docket No. PRM-51-1]

NEW ENGLAND COALITION ON NUCLEAR POLLUTION

Extension of Comment Period

On January 16, 1976 the Nuclear Regulary Commission published in the FEDERAL REGISTER (41 FR 2448) a notice that a petition for rule making had been filed with the Commission by the New England Coalition on Nuclear Pollution.

The petitioner requested that the Commission amend its regulation, "Licensing and Regulatory Policy and Procedures for Environmental Protection," 10 CFR Part 51, to correct alleged deficiencies in Table S-3, "Summary of Environmental Considerations for Uranium Fuel Cycle".

Interested persons were invited to submit comments on the petition by March 16, 1976. In view of the interest which has been shown on the subject matter of the petition, the Commission is hereby extending the time for filing comments.

All interested persons who desire to submit written comments or suggestions concerning the petition for rule making should send them to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 on or before April 26, 1976.

A copy of the petition for rule making with its appendix and enclosures is available for public inspection in the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. A copy of the petition may be obtained by writing the Division of Rules and Records at the above address.

45 FR 25567
Published 4/15/80
Comment period expires 6/16/80

[Docket No. PRM-51-6]

Catherine Quigg; Filing of Petition for Rulemaking

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Publication of petition for rulemaking by Catherine Quigg.

SUMMARY: The Nuclear Regulatory Commission (NRC) is publishing for public comment a petition for rulemaking filed by Catherine Quigg, Research Director, Pollution and Environmental Problems, Inc. The petition, which has been assigned Docket No. PRM-51-6, requests the NRC to amend 10 CFR Part 51, "Licensing and Regulatory Policy and Procedures for Environmental Protection," to require the preparation of a generic environmental impact statement for high burnup nuclear fuel as used in commercial nuclear reactors, stored in spent fuel pools or cooling racks, or potentially as processed in reprocessing plants or disposed of in permanent sites.

DATE: Comment period expires June 16, 1980.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street, N.W., Washington, DC. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

All persons who desire to submit written comments or suggestions concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docket and Service Branch.

FOR FURTHER INFORMATION CONTACT: Joseph M. Felton, Director, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC, 20555, Telephone: 301–492–7211.

SUPPLEMENTARY INFORMATION: The petitioner states that with the decision not to reprocess, the Federal government and the utilities want to use more uranium in existing nuclear fuel in light water reactors across the country. To that end, the U.S. Department of Energy (DOE) has initiated cost-shared high burnup projects with Duke Power Company and Arkansas Power & Light. The DOE is also supporting two pellet clad interaction (p.c.i.) projects with Consumers Power Company and Commonwealth Edison Company.

The petition also states that on March 7, 1979 the NRC issued a permit to the Commonwealth Edison Company allowing the irradiation of four Zion fuel assemblies to extend burnups in Zion 2, up to about 38,000 MWD/MTU. Zion's Technical Specifications previously provided for a burnup limit of 36,000 MWD/MTU. The petitioner indicates that there has been no experience with fuel size fuel assemblies irradiated to these burnups, but nonetheless the NRC issued a Negative Declaration stating the higher burnups would have no appreciable environmental impact.

The petitioner states that these experiments and others are being conducted without an Environmental Impact Statement, even though they could cause significant and widespread long and short term effects on the human environment. The petitioner says that her major concern is the nationwide program of high burnup fuel in nuclear reactors that is sure to follow these fairly limited experiments. She requests, therefore, that 10 CFR Part 51 be amended to require that a full Environmental Impact Statement be prepared covering the generic environmental impacts of high burnup nuclear fuel as used in commercial nuclear reactors, stored in spent fuel pools or cooling racks, and potentially as processed in reprocessing plants or disposed of in permanent sites.

The petitioner concludes that the use of high burnup fuel could have the following significant effects upon the human environment:

1. Greater fission gas releases from nuclear reactors.
2. Increased fission gas releases from spent fuel pools.
3. Production of inferior grade nuclear spent fuel which can lead to long term environmental hazards.
4. Potential for greater radiological impact in reactor and spent fuel pool accidents.
5. Increased radioactive releases during reprocessing.

The petitioner's arguments with respect to each of the above potential effects are set forth in the petition.

PART 51 LICENSING AND REGULATORY POLICY AND PROCEDURES FOR ENVIRONMENTAL PROTECTION

STATEMENTS OF CONSIDERATION

39 FR 26279
Published 7/18/74
Effective 8/19/74

ENVIRONMENTAL PROTECTION

Licensing and Regulatory Policy and Procedures

On November 1, 1973, the Atomic Energy Commission published in the FEDERAL REGISTER (38 FR 30203) proposed amendments to 10 CFR Parts 2, 30, 40, 50, and 70 of its regulations, and a proposed new Part 51 to be entitled "Licensing and Regulatory Policy and Procedures for Environmental Protection."

The proposed regulations were intended to implement the revised Guidelines of the Council on Environmental Quality published in the FEDERAL REGISTER on August 1, 1973, pertaining to preparation of environmental impact statements pursuant to the National Environmental Policy Act of 1969 (NEPA), 83 Stat. 852. The proposed regulations would place all of the Commission's policy and procedures implementing the Act with respect to the Commission's licensing and regulatory program, previously set forth in Appendix D of 10 CFR Part 50, into a new Part 51, which would apply to rule making as well as licensing of production and utilization facilities and nuclear materials.

Interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments by December 17, 1973. After consideration of the comments received and other factors involved, the Commission has adopted the proposed amendments with certain modifications. The more significant ones are described below.

(1) Issuance of facility manufacturing licenses for nuclear power reactors and construction permits or operating licenses for isotopic enrichment plants have been added to the categories of actions for which an environmental impact statement will be prepared by the Commission in § 51.5(a). The category of "full-power, full-term operating licenses" for which an impact statement is required has been changed to "full-power or design capacity". Appropriate additions to other sections to reflect the above additions have been made.

(2) In the category of amendments of materials licenses in § 51.5(b)(4) for which an environmental impact statement may be prepared, the criterion of "a significant increase in the amount of materials authorized to be used" has been changed to "a significant increase in the potential for accidental releases".

(3) The category of substantive and significant amendments to specified AEC regulations in § 51.5(b)(6) for which an environmental impact statement may be prepared has been qualified to refer to substantive and significant amendments from the standpoint of environmental impact. Amendments to 10 CFR Parts 30 and 40 concerning exemption of products containing byproduct material or source material have been added to the categories of actions for which an environmental impact statement will be prepared in § 51.5(a).

(4) Appropriate references to the Council on Environmental Quality's Guidelines on Preparation of Environmental Impact Statements, 40 CFR Part 1500, have been added with regard to preparation of AEC environmental impact statements.

(5) Provision has been made for routine distribution of draft environmental impact statements to appropriate environmental organizations and to all parties to the proceeding if the draft statement is prepared for a licensing action.

Part 51 also incorporates the recently published changes to Appendix D of Part 50 dealing with the environmental effects of the uranium fuel cycle (39 FR 14188), and appropriate conforming amendments have been made in 10 CFR Parts 2 and 50 relating to the issuance of limited work authorizations (39 FR 14506).

Part 51 does not affect the status of the proposed Annex to Appendix D to Part 50 regarding the discussion of accidents in environmental reports published by the Commission for comment on December 1, 1971. The proposed Annex is still under consideration by the Commission.

Pursuant to the Atomic Energy Act of 1954, as amended, the National Environmental Policy Act of 1969, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10 of the Code of Federal Regulations, Chapter 1, are published as a document subject to codification.

40 FR 1005
Published 1/6/75
Effective 2/5/75

PART 51—LICENSING AND REGULATORY POLICY AND PROCEDURES FOR ENVIRONMENTAL PROTECTION

Environmental Effects of Transportation of Radioactive Materials to and From Nuclear Power Plants

On February 5, 1973, the Atomic Energy Commission published in the FEDERAL REGISTER a notice of consideration of an amendment to Appendix D, Interim Statement of General Policy and Procedure: Implementation of the National Environmental Policy Act, 10 CFR Part 50, Licensing of Production and Utilization Facilities, (38 FR 3334). The amendment proposed would supplement the Commission's rules for implementing section 102(2)(C) of the National Environmental Policy Act of 1969 (NEPA). The proposed amendment addressed the question of consideration of environmental effects associated with the transportation of nuclear fuel and wastes in individual cost-benefit analyses for light-water-cooled nuclear power reactors. An Atomic Safety and Licensing Appeal Board had earlier held that such effects should be considered.[1] The proposed amendment would allow applicants in their environmental reports, and the Commission in its detailed environmental statements, to account for the environmental effects of transportation of fuel and waste by using specified numeric values contained in an appended Summary Table.

The proposed amendment has been adopted by the Commission in the form set out below. Since the time of publication of the Notice of Proposed Rule Making in this proceeding, the Commission has promulgated a new 10 CFR Part 51, Licensing and Regulatory Policy and Procedures for Environmental Protection, (39 FR 26279), which replaces and supersedes Appendix D to 10 CFR Part 50. In view of this, the rule set out below is in the form of an amendment to 10 CFR Part 51 rather than in the form of the originally proposed amendment to Appendix D to 10 CFR Part 50. To the extent that this rule differs from the Appeal Board decisions in *Vermont Yankee, supra*, those decisions have no further precedential significance.

[1] Vermont Yankee Nuclear Power Corporation (Vermont Yankee Nuclear Power Station), ALAB-86, ALAB-73 (June 6, 1972 and October 11, 1972).

In conjunction with publication of the proposed amendment, the Commission, by notice published in the FEDERAL REGISTER on February 5, 1973 (38 FR 3334), announced the availability for comment of the "Environmental Survey of Transportation of Radioactive Materials to and from Nuclear Power Plants" (WASH-1238), dated December 1972 and prepared by the Commission's Regulatory Staff. The Environmental Survey, which serves as a primary data base for the amendment, considers and assesses the contribution of environmental effects from transportation of fuel and solid wastes for a "typical" light-water-cooled nuclear power reactor. The Survey also contains an analysis of the probabilities of occurrences of transportation accidents, the expected consequences of such accidents, and an analysis of the potential radiation exposures to transportation workers and the general public under normal conditions of transport. The document was not intended to serve, however, as a detailed analysis of alternatives and costs and benefits as they relate to the transportation aspects of the uranium fuel cycle. Nor was the purpose of this proceeding to undertake a full environmental review of transportation of fuel and waste. The purpose of this proceeding was to determine certain elements to be factored into impact statements in particular licensing proceedings. As in the rulemaking proceeding on the Environmental Effects of the Uranium Fuel Cycle (39 FR 14188, April 22, 1974), this proceeding addresses a procedural question involving the implementation of NEPA's requirement for cost-benefit analyses in impact studies. For this reason, no environmental impact statement has been prepared in connection with the rule adopted herein.

The Commission notes that transportation of mixed oxide fuel and waste to and from light-water reactors will be considered separately in the generic environmental impact statement currently being prepared in connection with use of that type of fuel in light-water reactors. In addition, a number of other studies are currently being conducted which relate to the transportation of radioactive materials, including reactor fuels and waste. These studies include, among others, (i) a surveillance program of cargo handlers and loading crews to determine the exposure of personnel involved in handling radioactive materials; (ii) a joint AEC-Department of Transportation program to simplify regulations to assure adequate training of shipper and carrier personnel and to encourage development of industry standards on transportation of radioactive materials; and (iii) development of guides for state and local authorities on responsibilities and procedures for handling emergency situations.[1] Any pertinent results of these studies and other ongoing studies will be reflected in a revised Environmental Survey, when such a revision is determined to be necessary.

In the notice of proposed rule making, all interested persons were invited to submit written comments and suggestions in connection with the proposed amendment and the Environmental Survey within 60 days after publication of the notices in the FEDERAL REGISTER. In addition, an informal rule making hearing was held on April 2, 1974 in Washington, D.C. to permit interested members of the public to present written and oral views on the Environmental Survey and the approach to consideration of the environmental effects associated with the transportation of fuel and waste.

In setting forth the procedural format which was to be followed in the informal rule making hearing, the Commission specified, among other things, that since the hearing would be part of a rule making rather than an adjudicatory proceeding, the provisions of Subpart G, "Rules of General Applicability," of Part 2 of the Commission's Rules of Practice would not be applicable and, therefore, such procedural features as discovery and cross-examination would not be utilized.

It was provided, however, that the participants in the hearing would be subject to questioning by the presiding hearing board and that at the conclusion of the hearing, the record was to be held open for a period of 30 days, during which time any person could file supplemental written comments deemed appropriate in light of the hearing record. The notice further provided that after the expiration of the 30-day period, the presiding hearing board, without rendering any decision or making any recommendation, was to forward the hearing transcript to the Commission together with an identification of issues raised at the hearing.

Written comments were received from 26 individuals and organizations including Federal and State agencies, industry, public utilities, environmental and citizens groups, and private citizens. Participants in the informal rule making hearing included the Commission's Regulatory Staff; the Environmental Protection Agency; the Atomic Industrial Forum; the Consolidated Utility Group; and Mr. Richard Sandler representing Mr. Ralph Nader, Friends of the Earth, and the Consolidated National Intervenors.

In its Report to the Commission by the Fuel and Waste Transportation Rule Making Hearing Board, submitted on September 26, 1973, the presiding hearing board identified seven areas in which it believed issues were raised either at the hearing itself or by the written comments filed both before and after the public hearing.

The first area in which an issue was identified concerns the adequacy of the rule making procedures employed and the nature of the participation by interested persons and organizations. One participant, Mr. Richard Sandler, argued that for any rule making hearing dealing with the environmental effects of transportation of fuel and waste on a generic basis to be legally valid, the hearing must incorporate the same procedural features used in individual production and utilization facility licensing adjudicatory proceedings, including the rights of discovery and cross-examination.

The Commission considered a similar challenge to the legal validity of the rule making proceding on the Environmental Effects of the Uranium Fuel Cycle cited above. The Commission concluded there, as it does here, that adjudicatory procedures were not warranted. Each participant was given all the time he requested for his oral presentation and was afforded full opportunity to submit information and data for the record. No testimony offered was excluded from the record. All documents, including the Survey, were available to the parties several weeks before the hearing. In addition, each participant was invited to submit to the hearing board relevant questions for the Regulatory Staff and/or other participants.

The second area in which issues were identified by the presiding hearing board concerns the technical adequacy of the Environmental Survey. The board noted that there had been a number of comments from a variety of sources on such matters as: (i) the choice of population distribution and exposure time parameters used in estimating exposure dose (man-rem) value, (ii) the operation and testing of shipping containers and the effects of accidents on members of the public, (iii) testing and possible failure of fuel rods, and (iv) the assumptions and methods employed in analyzing input data and calculating critical parameters.

With respect to the choice of population distribution and exposure time parameter, the Staff indicated that it chose "average" estimates. Although one could postulate a situation wherein a larger (than "average") number of persons would be exposed to radiation for a longer time period, the radiation exposure of that larger group would still be only a very small fraction of the 3 man-rem per year shown in the rule as the total exposure to the general public for transportation. Thus, since use of parameters exceeding "average" estimates would still not exceed the 3 man-rem value for normal transportation exposure, the Staff's selection of average estimates was appropriate.

With respect to the operation and testing of packages used in the shipment of fuels and wastes to and from nuclear reactors and the effects of accidents on members of the public, the Commission's regulations in 10 CFR Part 71 impose specific requirements on shippers: (i) to demonstrate the adequacy of their packages by tests or engineering analysis at the design stage; (ii) to perform careful quality assurance control during package fabrication; (iii) to exercise close supervision over the loading and closing of packages; and (iv) to perform adequate maintenance and testing to assure that levels of containment, shielding, and effectiveness of the package are maintained throughout its useful life. More important, Part 71 requires that package designs be reviewed and approved by the Commission and prescribes specific package standards which must be met during design and construction. These standards include standards for hypothetical accident conditions such as a 30 foot free drop onto an essentially unyielding surface, a 40 inch drop onto a penetrating bar, exposure to a temperature of 1,475°F for 30 minutes, and immersion under at least 3 feet of water for a period of not less than 8 hours. Generally, these hypothetical accident conditions are designed to qualify a package to withstand the actual conditions which might be encountered in severe transportation accidents.

[1] The guides will include responsibilities of State and local law enforcement authorities coordinating with AEC personnel in emergency situations.

Although these packaging standards and criteria establish the threshhold for package failure, analysis of test results cited in the Environmental Survey show that some designs will withstand stresses well above test conditions. ("Special Tests for Plutonium Shipping Containers—6m, SP5795, and L–10," L. F. Stravasnik SC–DR–72 0597, September, 1972. In these tests, shipping containers survived impact tests from a height of 270 feet, puncture tests from a height of 12.5 feet, and fire tests at 1800°F for 1 hour.) In addition, where packages are to be used in the shipment of larger quantities of special nuclear material (e.g., casks used in the shipment of irradiated fuel), the Commission's Directorate of Regulatory Operations makes observations during the fabrication of the package and reviews records of quality assurance and fabrication, use, and maintenance records to assure that the package is fabricated and used in accordance with the approved design specifications.

With respect to the effect of accidents on members of the public, the Survey contains an extensive discussion of accident severity categories, together with the accident probabilities for those categories for truck, rail, and barge per vehicle mile. Accident consequences for many of the more severe categories of accidents are analyzed, including accidents with probabilities so low as to be considered incredible. Although accidents even more serious than those analyzed in the Environmental Survey could be postulated, the Survey shows that their probability is even more remote and that, therefore, a detailed analysis of their consequences is unnecessary to describe adequately the risks to the general public.

Fuel rod failure, which is a major factor in determining radiation exposures resulting from severe accidents, was assessed in the Survey in the reported results of actual drop tests carried out on fresh fuel rods. In these tests, fuel rods were dropped from a height of 30 feet on to an unyielding surface. Results showed no leakage from the rods after being dropped on their end, side, and corners. Preliminary results reported by applicants submitting designs of shipping containers for transporting irradiated fuel indicate major damage to fuel elements may occur only under conditions of high impact forces or relatively high temperatures, i.e., above 1250°F. In calculating doses from releases under accident conditions in the Survey, the Staff assumed that up to 50 percent of the irradiated fuel rods failed. The basis for this assumption is the Staff's prediction that at 1250°F, 50 percent of the fuel rods in an irradiated fuel cask will perforate. For greater than a 50 percent failure rate, a much higher temperature for a longer period of time would be required. Such circumstances appear to be beyond the realm of possibility. An increase in fuel rod failure over and above the 50 percent assumed by the Staff might result in some increase in resultant doses, but since increased fuel rod failure affects only the accident case where there has been a breach of the irradiated fuel cask, and the probability of an accident causing such a breach is already so low, changes in the fuel rod failure rate would have little effect on the risk. Thus, the assumptions used by the Staff are sufficiently conservative, in the light of present knowledge that further assessment of fuel rod failure is unnecessary.

The hearing record indicates that the assumptions and methods used in analyzing the environmental effects set forth in the Survey were critically examined by industry, the general public, and particularly the Environmental Protection Agency. EPA initially took exception to Summary Table values for cumulative dose estimates for transportation workers and members of the general public because it had arrived at different conclusions concerning the probable exposure of persons to radiation due to transportation using the same data the Staff had used. EPA also recommended that the radiation dose values in the Summary Table be enlarged to encompass the majority of the nuclear reactor data analyzed rather than only 50 percent of the data, as was the case with the proposed values in the Summary Table.

At the hearing board's suggestion, the Regulatory Staff and the EPA met to re-examine their data and discuss their differences. Subsequent to that meeting, the Regulatory Staff submitted a letter to the Board and the other participants which explained that some of the differences in radiation dose estimates were due to differing interpretations of input data, some to differences in presentation, and some due to differences in assumed values for uncertain parameters. Although there was not complete agreement, the hearing board noted that the differences in calculated values were deemed by the Staff and EPA to be close enough to consider the discrepancy resolved. In addition, the Staff responded to the EPA recommendation for enlarging the values in the Summary Table to encompass a majority of data analyzed by increasing the values from 3 man-rem to 4 man-rem for transport workers and from 2 man-rem to 3 man-rem for members of the general public. These revised values would exceed the cumulative doses calculated for 90 percent of the 84 nuclear reactors for which specific analysis of the environmental impact of transportation had been made. It should be noted that these values in the rule are not reflected in the Environmental Survey. The Survey contains the detailed method of analysis for assessing the environmental impact of transportation of fuel and waste to and from a typical light-water reactor. The 3 and 4 man-rem values in the rule reflect the application of this methodology to 84 reactors at 53 different sites. Although the derivation of these values was explained by the Regulatory Staff during the course of the rule-making proceeding, the Staff intends to issue in the near future a supplement to the Survey outlining in detail the derivation of these impact values.

The Commission agrees with the Board concerning resolution of the Staff-EPA differences. The Commission has also accepted the Staff's recommendation to enlarge the cumulative dose values in the proposed rule and has revised the rule accordingly. It is anticipated, of course, that additional data and methods of analysis will be developed. At such time as these data and methods become available, the Commission will undertake a re-evaluation of the environmental impact and, where significant changes are indicated, will make appropriate changes in the Environmental Survey and, where necessary, the Summary Table of environmental impact.

A third area in which issues were identified by the hearing board relates to the scope of coverage of the amendment and the questions which were raised as to how and when it should be applied. In its supplemental comments, the Staff recommended that language be added to the proposed rule to make clear when and how the rule is to be applied and what criteria are to be used in determining whether a given case is or is not within the scope of the rule. In view of the question which had been raised over the amendment's scope, the Commission has incorporated clarifying language similar to that proposed by the Staff in the amendment set forth below. However, the Staff's recommended language relating to the general procedures to be followed for transportation falling outside the scope of the rule has not been included in the effective rule. Regardless of the methodology used for assessing the environmental effects of such transportation—be it that contained in the Survey or otherwise—any assessment will be subject to separate consideration in individual licensing cases if it covers transportation of a type which is outside the scope of the rule. Consequently, the Commission sees no need to spell out either general or specific procedures in this rule for covering transportation outside its scope.

The Commission is cognizant of the fact that there may occasionally arise a situation where transportation of fuel and waste for a particular reactor falls within the scope of the rule, but the transportation involves distances, population exposures, accident probabilities, or other factors which are much greater than those discussed and analyzed in the Survey or which are not accounted for in the Survey. In such an instance, parties to a reactor licensing proceeding have available to them the provisions of 10 CFR § 2.758 which provides, in part, that the Commission, upon a showing of special circumstances such as those mentioned above, may waive the application of a rule in a particular proceeding.

It should be noted that transportation of fuel and waste by air was not analyzed in the Environmental Survey and is outside the scope of this rule. Air transportation was not covered in the Survey primarily because fuel and wastes are currently not shipped to and from reactors via air owing to cost and space limitations. Should air shipments be contemplated in the future for fuel and/or wastes to or from a particular reactor, the environmental impact of such transportation would be subject to separate consideration in the individual reactor licensing proceeding. While the Commission is cognizant of the fact that there have been incidents aboard passenger aircraft involving improperly sealed containers which resulted in radiation exposures to passengers, these incidents did not involve shipments of reactor fuel or

wastes to or from nuclear reactors.

It should also be noted that sabotage and diversion of shipments of fuel and waste to and from reactors are not covered in the Enviornmental Survey and are not accounted for in the values contained in the Summary Table. The environmental effects of sabotage and diversion, therefore, are beyond the scope of the rule and are subject to appropriate separate consideration in individual reactor licensing proceedings. The Commission has promulgated regulations in 10 CFR Part 73 for safeguarding shipments of special nuclear material. It is actively pursuing the subject and has underway a number of studies which may ultimately culminate in separate rule making proceedings on the various aspects of sabotage and diversion in transportation. These studies include (i) development of a specially designed vehicle for transporting special nuclear material; (ii) expansion of secure communications systems; and (iii) an assessment of radiation effects of dispersion which might result from sabotage of special nuclear material shipments in transit.

A fourth area in which issues were identified concerns whether a substantial revision of the Survey and proposed amendment should be undertaken prior to issuance of the final amendment in light of the comments received. If such revisions are undertaken, the question then arises as to whether the Administrative Procedure Act requires reopening the proceeding and, if so, whether the proceeding should take the form of the original proceeding or some other form. The Commission believes that the existing Survey provides an adequate data base for the promulgation of the regulation set forth below. The changes in the cumulative dose values of the Summary Table are in response to EPA's comments and the Staff's recommendation. As noted earlier, the Staff intends to issue a supplement to the Survey explaining the derivation of these values. In addition, the Commission does not believe that incorporation of a clarifying scope provision into the amendment set forth below requires further public proceedings since this revision is clarifying in nature and reflects comments received during the course of the proceeding. Thus, since the Commission sees no present need for further rulemaking, there is no occasion to consider either reopening the proceeding or determining what form it should take.

A fifth area in which an issue was identified concerns the inter-relationship between the rulemaking proceeding on transportation and the rulemaking proceeding on the environmental effects of the uranium fuel cycle, a matter which we specifically addressed in the Notice of Proposed Rulemaking issued in this proceeding on February 5, 1973. The question raised was whether, because of this interrelationship, the two proceedings should be combined to avoid conflict or duplication. While this suggestion has some merit, it is apparent that consolidation would have unnecessarily delayed publication of an effective regulation relating to the environmental effects of the uranium fuel cycle. In any event, both the fuel cycle rule and this rule have been appropriately conformed as amendments to 10 CFR Part 51, and, in this manner, any potential for conflict or duplication has been eliminated.

The sixth area in which an issue was identified concerns whether any provision should be made for exempting or limiting the applicability of the final amendment insofar as pending licensing cases are concerned.

Since the environmental impact of transportation of fuel and waste is currently considered in individual proceedings on a case-by-case basis, the Commission believes that these cases can be expedited if given the benefit of the transportation rule. Accordingly, compliance with the new rule will be required upon the effective date.

A seventh area in which the Board identified an issue concerns suggestions made by many of the participants for revision and reexamination of the Environmental Survey at periodic intervals. While the Commission agrees with the suggestions that the Survey be re-examined from time to time to accommodate new technology and information, it does not believe it necessary or advisable to impose any specific time limit. As in the uranium fuel cycle proceeding, our view is that revision should be based on development of new methodologies and information for assessing the environmental impact associated with transportation, and not on any arbitrary or fixed time period.

The presiding hearing board also identified a number of miscellaneous items. One item concerns the Staff's position that since the overall environmental impact resulting from transportation is small, there is no need to search for alternative methods of reducing the impact still further. The question raised by the hearing board for Commission consideration is whether this position satisfies the principle of "as low as practicable" exposures. The Commission does not believe this proceeding is an appropriate one for considering whether or not the Staff's position with respect to transportation of fuel and wastes satisfies the "as low as practicable" requirement of 10 CFR Part 20. As indicated earlier, the purpose of this proceeding is to quantify the associated environmental impact of transportation of fuel and wastes under an existing set of circumstances. While the concept of "as low as practicable" must be considered in individual reactor licensing cases, it is not a concept which is applicable or appropriate to this proceeding. Of course, nuclear technology is not static. As improvements in packaging are developed, they will be reflected in the Commission's requirements.

Another of the Board's suggestions for Commission consideration concerns requiring the Environmental Survey to include the Summary Table together with an indication of which parts of the Survey provide the basis for each part of the Table.

As discussed earlier, the Survey provides a methodology for analyzing and assessing the environmental effects associated with the transportation of nuclear fuels and waste and contains environmental impact values for a "model" light-water reactor. The impact values contained in the Summary Table represent the application of that methodology to 84 reactors either under construction or in operation at 53 different sites. Impact values were derived for each individual reactor and values encompassing 90 percent of the 84 reactors studied were then calculated for insertion into the Rule. In view of the fact that the Staff intends to issue a Supplement to the Survey showing how these values were derived, the Commission believes that this matter has been resolved.

Finally, the Board mentioned three matters raised by comments of the participants which the Staff contended were beyond the scope of the proceeding. These were: (i) regulatory standards for packaging covered by other Commission regulations; (ii) methods of transportation, types of fuel, and materials not covered by the Survey; and (iii) transportation from other than a single nuclear power reactor (i.e., transportation from 1000 reactors as opposed to a single "model" reactor). While these matters may be of interest, the Commission agrees with the Staff's position that they are beyond the scope of this proceeding.

The purpose of this proceeding was not to consider the adequacy or inadequacy of the Commission's regulations governing packaging of nuclear material and wastes found in 10 CFR Part 71, but rather, in part, was to assess the environmental impact of transportation of fuel and waste packaged in accordance with those regulations. Likewise, the purpose of this proceeding was not to assess or speculate as to the environmental impact of differing modes of transportation or differing types of fuel, but rather was to assess the environmental impact associated with currently used methods of transportation of fuel and waste. As to transportation from 1000 reactors as opposed to a single "model" reactor, the purpose of this proceeding was to develop environmental impact values for transportation of fuel and waste that could be factored into cost-benefit analyses for individual reactors, not to assess the cumulative environmental impact of transportation of fuel and wastes for all reactors contemplated to be in operation at some future date.

On the basis of the foregoing, the record of the rulemaking hearing, consideration of the comments received, and other factors involved, the Commission has adopted the amendment set forth below. The amendment is in substance essentially the same as the amendment proposed in the notice of proposed rulemaking published February 5, 1973 (38 FR 3334) except for the addition of a scope definition, and changes in certain values to reflect EPA comments and clarifying and editorial changes to make it conform with the format of 10 CFR Part 51.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to 10 CFR Part 51 is published as a document subject to codification.

40 FR 31953
Published 7/28/75
Effective 7/28/75

PART 51—LICENSING AND REGULATORY POLICY AND PROCEDURES FOR ENVIRONMENTAL PROTECTION

Amendments of Table S–3 and Summary Table S–4

Table S–3—Summary of environmental considerations for uranium fuel cycle, of 10 CFR Part 51 contains a typographical error which was carried over from the original Table S–3 in the "Environmental Survey of the Uranium Fuel Cycle." The amendments set forth below correct the words now reading "Thermal (billions)" in the first column of Table S–3 to read "Effluents—Thermal (billions of Btu):".

The Commission's Office of Standards Development has prepared "NUREG–75/038, Environmental Survey of Transportation of Radioactive Materials to and from Nuclear Power Plants Supplement I" dated April 1975 which presents the data and identifies the methods used in deriving the values in Summary Table S–4—Environmental Impact of Transportation of Fuel and Waste to and from One Light-Water-Cooled Nuclear Power Reactor. The amendments of 10 CFR Part 51 set forth below amend footnote 1 of Summary Table S–4 to reflect the availability of "NUREG–75/038" which may be obtained from the National Technical Information Service, Springfield, Virginia 22161. A copy of "NUREG–75/038" is available for inspection and copying at the Commission's Public Document Room at 1717 H Street, N.W., Washington, D.C.

The amendments also correct the line in the body of Summary Table S–4 beginning with "Transportation workers" to show that the range of doses is 0.01 to 300 millirem rather than 0.0 to 300 millirem.

Because these amendments relate solely to corrections and minor matters, the Commission has found that good cause exists for omitting notice of proposed rule making, and public procedure thereon, as unnecessary, and for making the amendments effective on July 28, 1975.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 51, are published as a document subject to codification.

41 FR 15832
Published 4/15/76
Effective 5/17/76

Construction Permit or Operating License: Initial Treatment of Application

See Part 50 Statements of Consideration.

42 FR 34276
Published 7/5/77
Effective 8/4/77

PART 51—LICENSING AND REGULATORY POLICY AND PROCEDURES FOR ENVIRONMENTAL PROTECTION

Environmental Reports by Certain Applicants for Licenses

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final Rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulation "Licensing and Regulatory Policy and Procedures for Environmental Protection" to require that 15 copies of the environmental reports applicable to materials licenses be submitted to the NRC and that an additional 85 copies of the environmental report be retained by the applicant for distribution to Federal, State and local officials in accordance with written instructions issued by the Director of Nuclear Material Safety and Safeguards. The amendments reduce the number of copies of environmental reports applicable to materials licenses from 150 to 100 copies. The amendments will materially expedite the distribution of environmental reports by eliminating duplicate handling of them by the applicant and the NRC staff, and will alleviate problems of the NRC staff with regard to the receipt, storage, assembly, and remailing of large volumes of environmental reports.

DATE: This rule becomes effective on August 4, 1977.

FOR FURTHER INFORMATION CONTACT:

Gerald L. Hutton, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (phone (301) 492–7211).

SUPPLEMENTARY INFORMATION: On March 3, 1977, the Commission published in the FEDERAL REGISTER (42 FR 12186) for comment proposed amendments of 10 CFR 51.40 which would reduce the number of copies of environmental reports applicable to Parts 30, 40, and 70 licenses from 150 to 100 copies.

The amendment of § 51.40 also would require that 15 copies of the environmental reports applicable to Parts 30, 40, and 70 licenses be submitted to the NRC and that an additional 85 copies of the environmental report be retained by the applicant for distribution to Federal, State, and local officials in accordance with written instructions issued by the Director of Nuclear Material Safety and Safeguards.

Only one comment was received in response to the notice of proposed rule making. The commenter concurred with the adoption of the proposed amendment, but also suggested that a reasonable time limit be added for applicant's storage of copies of the reports in order to alleviate storage, assembly, and document control problems by applicants. It is the Commission's view that the suggested time limit for storage of copies of the reports is unnecessary. Of the 85 copies of the report to be retained by the applicant, 60 to 65 copies will be distributed initially in accordance with written instructions by the Director of Nuclear Material Safety and Safeguards. Retention or disposition of the 20 to 25 copies of the environmental report which remain following issuance of the Final Environmental Statement and the licensing action requested by the applicant will be a matter of written instructions to the applicant by the Director of Nuclear Material Safety and Safeguards.

Direct distribution by the applicant of the additional copies of the environmental report will materially expedite the distribution of such copies by eliminating duplicate handling of them by the applicant and the NRC staff. This procedure also will alleviate problems of the NRC staff with regard to the receipt, storage, assembly, and remailing of large volumes of environmental reports.

The text of the rule set forth below is identical with the text of the proposed amendments published on March 3, 1977.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 51, are published as a document subject to codification.

43 FR 7209
Published 2/21/78
Effective 2/21/78

PART 2—RULES OF PRACTICE

PART 51—LICENSING AND REGULATORY POLICY AND PROCEDURES FOR ENVIRONMENTAL PROTECTION

Distribution of Environmental Impact Statements

AGENCY: Nuclear Regulatory Commission.

ACTION: Effective rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations relating to the distribution of environmental impact statements to reflect the transfer to the Environmental Protection Agency from the Council on Environmental Quality of certain responsibilities for the receipt and filing of such statements and to change certain statutory citations to make them conform to the citations provided for by present law.

EFFECTIVE DATE: February 21, 1978.

FOR FURTHER INFORMATION CONTACT:

Bennett L. Harless, Division of Site Safety and Environmental Analysis, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone: 301-492-8421.

SUPPLEMENTARY INFORMATION: Pursuant to the President's reorganization plan for the Executive Office of

the President (Reorganization Plan No. 1 of 1977, July 15, 1977) the functions of the Council on Environmental Quality (CEQ) relating to the receipt and filing of environmental impact statements were transferred to the Environmental Protection Agency (EPA). Effective December 5, 1977, Federal agencies, including NRC, are required to deliver five (5) copies of all draft, final, or supplemental environmental impact statements filed pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969 directly to the Environmental Protection Agency and to discontinue sending such statements to the Council on Environmental Quality (42 FR 62183). The following amendments to 10 CFR part 51 of the Commission's regulations entitled "Licensing and Regulatory Policy and Procedures for Environmental Protection," implement this change.

Paragraph 2.104(b)(3)(i) of 10 CFR Part 2, and §§ V(f)(3), VI(c)(1)(v), VI(c)(3)(i), and VIII(b)(7) of Appendix A of Part 2, and §§ 51.20(a)(5) and 51.52(c)(1) of 10 CFR Part 51 cite "section 102(2)(D)" of the National Environmental Policy Act (NEPA). Public Law 94-83, 89 Stat. 424 (42 U.S.C. 4332), amended NEPA so as to redesignate section 102(2)(D) as section 102(2)(E). The following amendments change the citations to conform them to the redesignation.

Since these amendments relate solely to minor procedural matters, notice of proposed rulemaking and public procedure thereon are unnecessary and good cause exists to make the amendments effective on February 21, 1978.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 2 and 51, are published as a document subject to codification.

43 FR 6915
Published 2/17/78
Effective 5/3/78

Export and Import of Nuclear Facilities and Materials

See Part 110 Statements of Considerations.

43 FR 46292
Published 10/6/78
Effective 11/6/78

PART 2—RULES OF PRACTICE FOR DOMESTIC LICENSING PROCEEDINGS

PART 51—LICENSING AND REGULATORY POLICY AND PROCEDURES FOR ENVIRONMENTAL PROTECTION

Distribution of Applications and Environmental Statements to Local Officials

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations to provide for notice to the chief executives of the appropriate alternative municipalities or counties which have been identified in the application or environmental report as alternative sites for nuclear facilities or activities. The notice will include a brief description of, and other pertinent information regarding, the site and facility proposed or alternatively listed. The notice will include a statement that if a request is received from the appropriate chief executive of the alternative site, a copy of the application or environmental report, and any changes to such documents which affect the alternative site location, will be transmitted to the executive who makes the request. This amendment will assure that local officials of communities which are preferred or alternative sites for nuclear facilities are notified at the same time the initial application or environmental report is submitted to the Commission.

EFFECTIVE DATE: November 6, 1978.

FOR FURTHER INFORMATION CONTACT:

Gerald L. Hutton, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, 301-492-7086.

SUPPLEMENTARY INFORMATION: By letter dated July 7, 1976, the township of Lower Alloways Creek, N.J., filed with the Nuclear Regulatory Commission a petition for rulemaking to amend 10 CFR 2.101 and 10 CFR 51.24 of the Commission's regulations.

In response to the petition for rulemaking PRM-51-2 the Commission published a notice of proposed rulemaking in the FEDERAL REGISTER on January 17, 1977 (42 FR 3178) to amend 10 CFR Parts 2 and 51.

The proposed amendment of § 2.101 set out in the January 17, 1977 notice would add a provision to paragraph (a)(3)(ii) that the applicant will also be requested to serve a copy of the tendered application and/or environmental report on the chief executives of the appropriate municipalities or counties which have been identified in the application or environmental report as alternative sites.

The proposed amendment of § 2.101 would add a provision to paragraph (b) which pertains to applications for licenses for receipt of waste radioactive material from other persons for the purpose of commercial disposal by the waste disposal licensee, that the applicant will also serve a copy of the application and environmental report, as appropriate, on the chief executives of the appropriate alternative municipalities or counties which have been identified in the application or environmental report as alternative sites.

The proposed amendment of § 51.24 would revise paragraph (c)(4) to provide that if the draft environmental impact statement is for a licensing action, copies of the draft statement and the applicant's environmental report will be provided to all parties to the licensing proceeding and the chief executives of all municipalities or counties which are identified in the draft statement as either preferred or alternative sites for the proposed facility or activity.

Six letters of comment were received on the petition for rulemaking and the notice of proposed rulemaking.

One commenter opposed the proposed rule, contending that jurisdictional officials and the public are aware of proposed projects even before the filing of an application; that the filing of applications with jurisdictional officials at alternative sites could have adverse impacts on local planning and land values; and that filing of the application would only serve to cause infighting between jurisdictions, possibly resulting in delays in the licensing process.

Although officials and the public may be aware of preferred sites before the filing of an application there is no assurance under present procedures that all officials with jurisdiction over alternative sites will know that a site in their area is under consideration or that the relative merits of such a site may have been the subject of dispute at hearings held in a different locale. The Commission is not convinced that furnishing such information to officials over alternative sites would have adverse impacts on local planning and land values, or cause jurisdictional conflicts resulting in licensing delays.

Three commenters opposed the proposed amendments on the grounds that they would require the service of voluminous and expensive documents upon individuals who have no real interest in receiving them, thereby placing an unjustified burden on applicants and municipal and county offi-

cials, without corresponding benefits to the public, the licensing process, or the municipalities or counties considered as alternative sites. These commenters suggested, however, that if some action is desired in this area, a more reasonable approach would be to notify the chief executives of municipalities or counties which have been designated as an alternative site in the application or environmental report of the availability of the documents. To the extent that such officials are interested, they could request copies of the documents.

It is the Commission's view that local officials of all of the communites or counties involved should be informed of the plans for a facility or a commercial waste disposal service or activity at the time the application or environmental report is submitted to the Commission. The Commission has concluded, however, that this objective can be accomplished in accordance with the alternative approach suggested by the three commenters noted in the preceding paragraph. Accordingly, the amendments set forth below have been revised to provide for notice to the chief executives of sites which have been identified in the application or environmental report as alternative sites. The notice will include a brief description of the proposed site and facility, the location of the site and facility proposed or alternatively listed, and will include a statement that if a request is received from the appropriate chief executive of the alternative site, a copy of the application or environmental report, and any changes to such documents which affect the alternative site location, will be transmitted to the executive who makes the request. A sentence has been added to §§ 2.101(a)(3)(ii) and 2.101(b) that an applicant in complying with those paragraphs should not make public distribution of those parts of the application subject to § 2.790(d); that is, information which identifies a licensee's or applicant's procedures for safeguarding licensed special nuclear material or detailed security measures for the physical protection of a licensed facility or plant in which licensed special nuclear material is possessed or used. A sentence has been added also that the applicant shall submit to the Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate, an affidavit that service of the notice of availability of the application and environmental report has been completed along with a list of names and addresses of those executives upon whom the notice was served.

One firm commented favorably upon the proposed rule and suggested that local public document rooms be set up in the region of the alternative sites for displaying to the public the environmental report, draft environmental impact statement, and any other documents affecting the alternate sites. The Commission agrees that it may be desirable to establish a local public document room, or a mini-LPDR, in the region of the alternative sites in some cases. The Commission does not consider, however, that this should be done routinely. A determination will be made on a case-by-case basis after a survey of the public interest in the area of the alternative site.

One commenter encouraged the adoption of the proposed rule, but suggested that applications for amendments to existing licenses as well as new nuclear facilities and waste management facilities shoud be included, and notification and service of an application upon the appropriate governor or designated State government official should be included as well as municipal and county government. The suggestion regarding applications for amendments to existing licenses is outside the scope of this amendment inasmuch as the site would have been determined when the license was issued. The Commission's regulations already provide for distribution of applications and environmental reports to appropriate State officials.

The commenter also suggested that a provision for an early notice of intent to file and application be considered. It is the Commission's view that the present regulation, as amended below, provides for early notice to officials of alternative sites and notice of intent to file and application would not serve a useful purpose.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 2 and 51 are published as a document subject to codification.

44 FR 45362
Published 8/12/79
Effective 9/4/79

10 CFR Part 51

Licensing and Regulatory Policy and Procedures for Environmental Protection; Uranium Fuel Cycle Impacts From Spent Fuel Reprocessing and Radioactive Waste Management

AGENCY: Nuclear Regulatory Commission.

ACTION: Promulgation of a final fuel cycle rule.

SUMMARY: The Commission promulgated on March 14, 1977 an interim rule identifying the environmental impact values for the uranium fuel cycle which are to be included in environmental reports and environmental impact statements for individual light water nuclear power reactors. After an extensive proceeding focused on the nuclear waste management and fuel reprocessing parts of the fuel cycle, the Commission now promulgates a final rule which sets out revised impact values. The rule also specifies fuel-cycle-related subjects that are to be considered in individual licensing proceedings as part of the environmental cost-benefit analysis for a power reactor. The Commission notes its intention to conduct a further supplementary rulemaking to adopt as part of the rule an explanatory narrative addressing the environmental significance of the impact values tabulated in the final rule. A general update of the rule with respect to all aspects of the uranium fuel cycle is also in progress.

EFFECTIVE DATE: September 4, 1979.

FOR FURTHER INFORMATION CONTACT: E. Leo Slaggie, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC, 20555, phone 202–634–3224.

SUPPLEMENTARY INFORMATION: This notice announces the outcome of a final rulemaking by the Nuclear Regulatory Commission regarding the environmental effects of spent fuel reprocessing and radioactive waste management in the light water power reactor uranium fuel cycle. The rule adopted herein replaces an interim rule which identifies fuel cycle environmental impact values to be included in environmental reports and environmental impact statements for individual light water power reactors. The interim rule, 10 CFR 51.20(e) ("Table S–3", as revised), was published on March 14, 1977 (42 FR 13803) to be effective for 18 months and was extended several times, the final extension being to the effective date of this rule.

This final rulemaking concludes a proceeding which began on May 26, 1977 with a notice that a rulemaking hearing would be held to consider whether the interim rule should be made permanent or, if it should be altered, in what respects. 42 FR 26987. The Hearing Board took extensive written and oral testimony from more than twenty participants. On August 31, 1978 the Board submitted to the Commission a detailed summary of the evidentiary record, followed on October 26, 1978 by its Conclusions and Recommendations.

After studying the Hearing Board's recommendation and receiving written and oral presentations by rulemaking participants, the Commission has adopted as a final rule the modified Table S–3 recommended by the Hearing

Board. The impact values in this table differ only slightly from the values in the interim rule. With two exceptions, these values will be taken as the basis for evaluating in individual light water power reactor licensing proceedings, pursuant to requirements of the National Environmental Policy Act (NEPA), the contribution of uranium fuel cycle activities [1] to the environmental costs of licensing the reactor in question. The exceptions are radon releases, presently omitted from the interim rule (43 FR 15613, April 14, 1978), and technetium-99 releases from reprocessing and waste management activities, as discussed later in this notice. Appropriate values for these releases are open for consideration in individual proceedings.

Promulgation of the revised table is not the sole outcome of this rulemaking. The rulemaking record makes clear that effluent release values, standing alone, do not meaningfully convey the environmental significance of uranium fuel cycle activities. The focus of interest and the ultimate measure of impact for radioactive releases are the resulting radiological dose commitments and associated health effects. To convey in understandable terms the significance of releases in the Table, the Hearing Board recommended that the modified Table be accompanied by an explanatory narrative promulgated as part of the rule. The recommended narrative would also address important fuel cycle impacts now outside the scope of the Table, including socioeconomic and cumulative impacts, where these are appropriate for generic treatment. The Commission has directed the NRC staff to prepare by October 1 such a narrative, as described in more detail later in this notice. The narrative will be submitted for public comment in a further rulemaking.

Pending adoption of an explanatory narrative as part of the fuel cycle rule, the use of Table S–3 in individual proceedings must be accompanied by supplementary presentations. Accordingly, the Commission has directed the NRC staff to continue presenting in individual proceedings an evaluation of dose commitments and health effects from fuel cycle releases. In addition, the staff will address economic, socioeconomic, and possible cumulative impacts of fuel cycle activities and such other impacts of the fuel cycle as may reasonably appear to have a significance for inidividual reactor licensing sufficient to warrant attention for NEPA purposes. These matters remain open for litigation in individual proceedings. The present rulemaking settles only the question of fuel cycle release values with the exceptions noted above, and such other numerical data that appear explicitly in the Table.

In response to a recent decision by the United States Court of Appeals for the District of Columbia Circuit, *State of Minnesota* v. *NRC*, Nos. 78–1289 and 78–2032 (May 23, 1979), the Commission intends to conduct a generic proceeding which will consider the most recent evidence regarding the likelihood that nuclear waste can be safely disposed of and when that, or some other off-site storage solution, can be accomplished. That new generic waste disposal proceeding will be separate and different in scope and purpose from further fuel cycle rulemakings dealing with an S–3 narrative and general update of S–3, but will in part review and update the conclusions regarding waste disposal which have been reached in the present rulemaking. If available, the record compiled in the new generic waste disposal proceeding can be considered in, and made a part of the record in, the general update of S–3.

The background of this proceeding and the reasons underlying the Commission's decision are explained in the material which follows.

I. Need For a Fuel Cycle Rule in Power Reactor Licensing

The National Environmental Policy Act of 1969 (NEPA) requires that the Commission look closely at the environmental impact of a proposed nuclear power reactor before it may license the construction or operation of the facility. To comply with NEPA the Commission has adopted licensing and regulatory procedures presently set out in 10 CFR Part 51. Under these rules the environmental analysis in a power reactor licensing proceeding must include a cost-benefit analysis which, among other things, considers and balances the adverse environmental impacts of the nuclear plant against the expected environmental, economic, technical, and other benefits.

The environmental impact of operating a nuclear power reactor is not limited to effects specific to the plant itself, such as site alterations due to plant construction or the release of reactor effluents. The environment will also be affected by the fuel cycle activities necessary to support plant operation. Since operation of a nuclear plant involves a commitment to prepare fuel and dispose of spent fuel and waste, the environmental impacts considered in the NEPA analysis for a power reactor should include contributions from uranium fuel cycle activities.[2]

Evaluating these contributions necessarily involves a wide-ranging inquiry and a certain amount of speculation. Fuel cycle facilities serve many reactors, and there is no way to ascertain with certainty which facility now in existence or to be operated in the future will contribute fuel to a given nuclear power reactor or will receive its irradiated fuel or wastes. Thus the fuel for a particular reactor cannot be identified at the start of the fuel cycle and traced through the various steps to final disposal. Instead, the fuel cycle impacts for a particular reactor must be estimated hypothetically, for example by apportioning the impacts of representative fuel cycle facilities to the number of reactors served. Determining these facility impacts also involves uncertainties, particularly for the back end of the cycle. For example, reprocessing of spent fuel, if it is done, would take place at newly designed facilities, not yet operational. Thus impacts based on previous reprocessing experience using outdated technology are not in the Commission's judgment representative of future impacts. For waste disposal many proposals have been put forth, but the method or methods which will finally be used are as yet unselected. A reasonable approach for determining waste disposal impacts is to focus on a system which seems likely to be deployed and to estimate its impacts conservatively, based on the best available information and analysis.

A study of fuel cycle impact thus involves difficult generic analysis and prediction well outside the normal scope of facility-specific subjects dealt with by a reactor licensing board. This does not mean that the subject can be ignored or deferred until the fuel cycle facilities themselves come up for licensing.[3] It does mean that in reactor licensing fuel cycle impacts should be treated where possible by generic rulemaking rather than case-by-case adjudication.

[1] The fuel cycle activities addressed by the rule include uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, spent fuel storage and disposal, reprocessing of irradiated fuel, transportation of radioactive materials and management of low-level wastes and high-level wastes. The rulemaking proceeding concluded here dealt only with impacts of reprocessing and waste management and associated transportation, the so-called "back-end" of the fuel cycle. The impacts of transportation of cold fuel to the reactor and irradiated fuel and solid radioactive wastes lie outside the scope of the rule and are treated separately in the Commission's regulations. See 10 CFR 51.20(g).

[2] Activities comprising the nuclear fuel cycle are listed in note 1, above.

[3] The court of appeals for the D.C. Circuit has specifically rejected such an approach and held that "absent effective generic proceedings to consider these issues, they must be dealt with in individual licensing proceedings." *NRDC* v. *NRC*, 547 F. 2d 663, 641 (1976), *rev'd on other grounds sub nom. Vermont Yankee Nuclear Power Corp.* v. *NRDC*, 435 U.S. 519 (1978).

The Commission's interim fuel cycle rule, 10 CFR 51.20(e), requires that the environmental costs to be considered in a power reactor licensing proceeding shall include contributions from uranium fuel cycle activities as set forth in a table ("Table S–3, Summary of environmental considerations for uranium fuel cycle"). The adequacy of this interim rule, insofar as waste management and reprocessing impacts are concerned, was the original focus of the present rulemaking, as the background discussion in the section to follow indicates. As the rulemaking progressed, however, participants submitted a substantial amount of public comment and testimony addressing matters not dealt with by the interim rule, including economic and socioeconomic impacts, numerical uncertainties in the estimates, and long-term dose commitments and health effects. This implicit broadening of the rulemaking's scope called attention to problems which must be addressed in a further rulemaking, but also indicated there may be confusion regarding the proper objective of a fuel cycle rule.

The rule aimed at in this proceeding has a limited purpose. It applies only to environmental cost-benefit balances for power reactors and is in no way intended to be a tool for choosing among alternative uranium fuel cycle technologies. Although the rule should reflect as accurate an assessment as reasonably possible of uranium fuel cycle impacts, the rule clearly does not need the detail or the precision of an environmental analysis for licensing fuel cycle facilities themselves. A reasonable degree of uncertainty is unavoidable and is acceptable, given that basic decisions have not yet been made regarding reprocessing and the technology of waste disposal.

The rule need not be comprehensive in scope to be a useful and valid exercise of rulemaking authority. A record is not yet available to support a comprehensive rule dealing with all generic aspects of fuel cycle impacts relevant to reactor licensing, but the Commission is free to adopt a narrower rule that for the present leaves some of these matters for consideration in individual proceedings. The table of impacts adopted as a final rule in this proceeding serves as an important first step in this consideration, relieving adjudicatory boards from the need to determine those numerical impacts of the uranium fuel cycle which have been extensively considered in generic rulemaking. Ultimately, however, the impacts of the releases and not the releases themselves dictate the standards the Commission must set. Therefore, use of the table in individual licensing will not foreclose discussion of the significance of those impacts or other important aspects of the fuel cycle not addressed by the table. This point needs emphasis in view of the background of the Commission's original S–3 rule, which at least initially was apparently interpreted as cutting off further discussion of fuel cycle impacts.

II. Background of the Fuel Cycle Rulemaking

1. *Promulgation and Application of the Original Fuel Cycle Rule, "Table S–3"*

In a Notice of Proposed Rulemaking published November 15, 1972 (37 FR 24191) the Atomic Energy Commission (AEC) announced a proceeding "that would specifically deal with the question of consideration of environmental effects associated with the uranium fuel cycle in the individual cost-benefit analysis for light water cooled nuclear power reactors." As a basis for this consideration the Commission's staff had published a report entitled "Environmental Survey of the Nuclear Fuel Cycle," dated November 6, 1972.[4] Citing the Environmental Survey, the Notice set out two proposed alternatives for public comment and consideration at an informal hearing. Under one alternative, no consideration of fuel cycle impacts (apart from facility-specific effects of transporting cold fuel to the reactor and spent fuel and radioactive wastes from the reactor) would be required in individual proceedings, on the grounds that these impacts as analyzed in the Environmental Survey were sufficiently small not to affect significantly the cost-benefit balance for an individual reactor. Under the second alternative, impact values for fuel cycle costs of licensing a power reactor would be taken in individual licensing proceedings as set forth in Table S–3 of the Environmental Survey.[5]

Written comments were submitted by more than forty individuals and organizations. The hearing took place February 1 and 2, 1973 before the three-person hearing board, following legislative-type procedures announced by the Commission in a supplemental notice (38 FR 49).

Following the hearing and supplementary written submissions by participants, the board on July 6, 1973 presented to the Commission a 24-page report which identified the major issues at the proceeding but, in accordance with the Commission's direction, made no recommendation.

After consideration of the comments and the hearing record, the AEC on April 22, 1974 (39 FR 14188), adopted the second alternative, under which "the environmental effect associated with the uranium fuel cycle, albeit small, would be factored into individual cost-benefit analyses in the form of numerical values," as set out in Table S–3, with minor revisions to reflect corrections or changes suggested by the hearing record. The Commission noted its view that the values in the table reflected "substantial conservatism" and found it to be a "fact that the environmental effects of the uranium fuel cycle have been shown to be relatively insignificant." The Commission concluded accordingly that there was no need to apply the rule retrospectively.

The Commission stated that it preferred to adopt Table S–3, rather than the alternative of declaring by rule that fuel cycle impacts are not significant for reactor licensing, because in conformance with other regulations the table "quantifies, to the fullest extent practicable, the environmental effects of the uranium fuel cycle in individual cost-benefit analyses." *Cf.* 10 CFR 51.20(b), 51.23(c). Consistent with the Commission's view at that time that Table S–3 represented a full quantitative account of fuel cycle contributions, the text of the rule stated that in applicants' environmental reports and Commission impact statements in individual licensing proceedings this contribution "shall be as set forth in . . . Table S–3 . . . No further discussion of such environmental effects shall be required."

The Commission notice promulgating the rule did not specifically mention health effects, socioeconomic impacts, or cumulative impacts, either to require or preclude their discussions, although it might fairly be concluded that the notice's repeated observation that fuel cycle effects were "insignificant" amounted to a Commission judgment implicit in the rule that no discussion of these effects was formally required. The Commission's regulatory staff applied the rule in practice as allowing fuel cycle impacts to be addressed in reactor licensing proceedings solely by the formal act of displaying Table S–3 in impact statements, with no further discussion. In particular, impact statements prepared by the staff did not

[4] A revised version of this Environmental Survey was published in April 1974 as WASH–1248.

[5] The tabulated impacts in Table S–3 included acres of land committed to fuel cycle activities, amount of water discharged by such activities, fossil fuel consumption, and chemical and radiological effluents, the latter in curies, all normalized to the annual fuel requirement for a model 1000 MWe light-water reactor. Notations accompanying the tabulated values included a few radiological doses in man-rem, but no estimates are given of human health effects caused by fuel cycle radiological effluents. The Environmental Survey did not give quantitative estimates of health effects.

analyze fuel cycle impacts in terms of health effects which might be caused by the radioactive releases tabulated in the rule and did not discuss socioeconomic or cumulative impacts.

Almost three years after the rule became effective, the Commission's Atomic Safety and Licensing Appeal Board issued a decision implying that discussion of fuel cycle health effects was desirable when the comparison between the proposed nuclear plant and an alternative coal plant was an issue in the licensing proceeding. *In the Matter of Tennessee Valley Authority* (Hartsville Nuclear Units), 5 NRC 92, 103 (1977). As part of its response to the Hartsville decision, the regulatory staff sought and received permission from reactor licensing boards to introduce evidence of the public health consequences of the nuclear fuel cycle compared with the coal fuel cycle. Cf. *In the Matter of Public Service Company of Indiana, Inc.* (Marble Hill Nuclear Generating Station), 7 NRC 179, 187 (1978). As the rule required, health effects in the staff's submissions were based on the tabulated radioactive release values in 10 CFR 51.20(e).[6] By this time, however, the original Table S–3 had been replaced by the amended table in the interim rule as a result of legal developments discussed next.

2. *The Vermont Yankee Decision*

On a petition to review the adequacy of the fuel cycle rulemaking proceedings, the United States Court of Appeals for the District of Columbia Circuit on July 21, 1978 set aside those portions of the rule pertaining to waste management and spent fuel reprocessing. *Natural Resources Defense Council* v. *NRC*, 547 F. 2d 633, rev'd *sub nom. Vermont Yankee Nuclear Power Corp.* v. *NRDC*, 435 U.S. 519 (1978). After first holding that fuel cycle impacts must be addressed in reactor licensing,[7] either by an effective rule or in the adjudicatory proceeding, the court found the rulemaking record insufficient to support the waste management and reprocessing parts of the rule because the procedures afforded during the hearing were inadequate, at least as applied by the hearing board.[8] The court saw the significance of Table S–3 as an expression "in numerical terms [of] the conclusion that the environmental effects of the fuel cycle, including waste disposal, are insubstantial." *Id.* at 646. With regard to reprocessing and waste disposal, "the focal points for this appeal," the court found that the Environmental Survey failed to provide "detailed explanation and support" for this conclusion and that testimony presented at the hearing did not fill the gap. The court noted that "[t]he only discussion of high level waste disposal techniques was supplied by a 20-page statement by [AEC witness] Dr. Frank K. Pittman," which the court criticized for its "conclusory quality." *Id.* at 645, 651. The court found that the procedures employed at the hearing failed to expose this statement to any "probing of its underlying analysis," *id.*, and concluded that the Commission had been arbitrary and capricious to adopt a rule "cutting off consideration of waste disposal issues and reprocessing issues in licensing proceedings based on the cursory development of the facts . . . in this [rulemaking] proceeding." The court vacated those portions of the rule and remanded to the Commission.

In important respects, however, the court of appeals approved the Commission's overall approach to the fuel cycle rulemaking. The court rejected the argument that a fuel cycle rule is itself a major Federal action requiring an impact statement. The court found it sufficient that a NEPA impact statement is prepared when Table S–3 is incorporated into a proposal to license an individual reactor. The court also saw no necessity for a "plenary consideration of alternatives" in evaluating waste disposal impacts for the purposes of the rule, "provided a sufficiently conservative and credible assessment of a particular waste disposal method is used." *Id.* at 653, note 57.

3. *Promulgation of the Interim Rule*

In response to the *NRDC* v. *NRC* decision and a related decision, *Aeschliman* v. *NRC*, 547 F. 2d 622 (D.C. Cir. 1976), the Commission on August 16, 1976 issued a General Statement of Policy (GSP) (41 FR 34707) announcing an intention to reopen the fuel cycle rulemaking proceeding to supplement the existing record on waste management and reprocessing impacts and to determine whether or not the rule should be amended. The Commission directed the NRC staff to prepare on an expedited basis a revised and well-documented environmental survey as the basis for an interim rule on waste management and reprocessing impacts. The General Statement of Policy also directed that no new full-power operating licenses, construction permits, or limited work authorizations should issue, pending the conclusion of a notice-and-comment interim rulemaking. With regard to licenses already issued, the Commisson indicated that, if requests for a show cause order based on fuel cycle grounds were received, licensing boards would be assigned to determine whether the licenses in question should be continued, modified, or suspended pending adoption of an interim rule.

The revised enironmental survey, NUREG–0116—Supplement 1 to WASH–1248, was completed in early October, 1976, and on October 18 the Commission published a notice soliciting public comment on the survey and a proposed interim rule. (41 FR 45849). Comments received in response to that notice and the Commission's responses to those comments were later published in March 1977 as NUREG–0216, Supplement 2 to WASH–1248.

On November 11, 1976 the Commission announced that licensing could resume on a conditional basis (41 FR 49998). As factors in this decision the Commission noted that (1) the court of appeals had stayed its mandate, leaving

[6] The Commission announced on April 14, 1978 an amendment to the fuel cycle rule which removed the release value for radon from the table and left radon impacts open for litigation in individual proceedings. 43 *Fed. Reg.* 15613. Subsequent to this amendment, the staff has been free to introduce evidence of radon-related health effects not based on Table S–3 release values. This notice also confirmed that the rule does not address health effects and does not preclude discussion of health effects in individual proceedings. The notice amended the second sentence of the rule to read: "No further discussion of the environmental effects addressed by the Table shall be required."

Mr. Marvin Lewis, one of the participants in this rulemaking, petitioned the Commission to "recede" Table S–3 in its entirety, citing as grounds asserted severe health effects from radon releases. The Commission has denied this petition, noting that radon releases are no longer addressed by the table.

[7] The court of appeals consolidated the petition to review the fuel cycle rule with a petition to review an Appeal Board holding in the Vermont Yankee Nuclear Power Station licensing proceeding that environmental impacts of reprocessing or waste disposal need not be considered in individual reactor licensing proceedings. *In the Matter of Vermont Yankee Nuclear Power Corp.*, 4 AEC 930 (June 6, 1972). The court of appeals rejected the Appeal Board's decision and held that reprocessing and waste disposal issues must be dealt with either by an effective rule or in individual licensing proceedings. The Supreme Court did not disturb this holding when it later reversed the court of appeals. The Supreme Court noted that the Commission "acted well within its statutory authority" in requiring that fuel cycle impacts be considered in reactor licensing proceedings. *Vermont Yankee Nuclear Power Corp.* v. *NRDC*, 435 U.S. 519, 539 (1978). The Commission in promulgating the fuel cycle rule had stated that the Appeal Board's Vermont Yankee decisions had no further precedential significance insofar as they differed from the rule. 39 *Fed. Reg.* 14188.

[8] Interpreters of the opinion have differed over the relative weight which the court of appeals in reaching its decision attached to procedural inadequacies and to insufficiency of the record. The Supreme Court was persuaded that the "ineluctable mandate of the court's decision is that the procedures afforded during the hearings were inadequate." 435 U.S. 519, 542. The Supreme Court reversed the court of appeals on this procedural question and remanded for consideration whether the evidentiary record supported the rule. The court of appeals has held in abeyance its decision on the remand, pending completion of the Commission's final rulemaking.

the S–3 rule formally in effect but conditioning new licenses on the outcome of petitions by licenses for Supreme Court review of the court's decision,[9] and (2) NUREG–0116 provided significant support for the conclusion that waste management and reprocessing impacts are slight, so that the interim rule, when promulgated, would not be likely to produce results in reactor licensing different from the original rule. The Commission also suspended show cause proceedings on fuel cycle grounds against light water reactor licensees. The Commission directed that new licenses could be issued only if a separate analysis determined that use of the impacts in the proposed interim rule would not tilt the cost-benefit balance against the reactor.

On March 19, 1977 the Commission promulgated the interim rule (42 FR 13803) to be effective for eighteen months, subject to extension for good cause. 10 CFR 51.20(e). In support of the interim rule the Commission noted that the two environmental supplements, NUREG–0116 and NUREG–0216, provided a "sufficient informational basis for the interim rule . . ." The Commission acknowledged that "there are gaps in the information needed for a detailed assessment of waste management and disposal technology" but found that "the costs of not proceeding outweigh the risks of proceeding by interim rule," given that within a relatively short period the issues would be more thoroughly discussed in the final rulemaking proceeding. The Commission terminated show cause proceedings initiated pursuant to the General Statement of Policy, noting that "the values in the interim rule are not sufficiently different from the values in the original Table S–3 to warrant revocation or suspension on cost-benefit grounds [of previously issued licenses]."[10] 43 FR 43806.

4. Initiation of the Present Rulemaking

Following promulgation of the interim rule, the Commission published a notice of hearing which initiated a final rulemaking. 42 FR 26987 (May 26, 1977). The procedures announced in the notice were the same as those applied in the original hearing, except that specific provision was made for the Hearing Board to entertain suggestions from participants regarding questions which the Board should direct to witnesses or other participants.[11] The subject of the hearing was "confined to the environmental effects of spent fuel reprocessing and radioactive waste management in the light water power reactor uranium fuel cycle, and to the question whether the outcome of the interim rulemaking should be made permanent for future use, or if it should be altered, in what respects."[12] Both NUREG–0116 and NUREG–0216 were specified for inclusion in the hearing record. The fuel cycle was to be taken to include alternatively (1) no reprocessing of spent fuel, or (2) reprocessing of spent fuel for purposes other than recycle of plutonium, with follow-on interim and/or long-term storage or disposal of plutonium and wastes from reprocessing, with plutonium either separated from or included with the wastes.[13]

The following parties participated in this reopened proceeding: the staff of NRC; the Environmental Protection Agency; the Department of Interior; the U.S. Geological Survey; the States of California (California Energy Resources Conservation and Development Commission), Delaware, Maryland, Ohio, Wisconsin and New York; Baltimore Gas and Electric Co., *et al.* (a group of 16 utilities); Commonwealth Edison Co., *et al.* (a group of 8 utilities); the Tennessee Valley Authority; the Allied-General Nuclear Services Co.; Exxon Nuclear Company; Westinghouse Electric Corporation; the Atomic Industrial Forum; the Natural Resources Defense Council; the Pacific Legal Foundation; Environmentalists, Inc.; the Sierra Club; the Union of Concerned Scientists; Mr. Marvin Lewis; and Dr. Chauncey Kepford.

At a prehearing conference held on July 28, 1977 the Hearing Board provided for the submission of written direct testimony by the participants, written questions and answers based on that testimony and follow-up questions, all prior to the start of the oral hearings. These hearings began on January 16, 1978 and concluded in March 1978 after ten days of testimony. During the hearings, in response to a petition by the State of New York, the Board expanded the scope of the proceeding to consider the economic feasibility of the model facilities on which the proposed Table S–3 values were based. The Board conducted all of the questioning during the oral hearings.

The Board compiled an extensive evidentiary record, including the staff's NUREG–0116 and NUREG–0216, the staff's testimony on the economic feasibility of its model facilities, the direct testimony of participants exceeding 1,100 pages, two rounds of written questions propounded by participants and several hundred pages of responses, more than 1,200 pages of transcript of oral hearings, written rebuttal testimony of the parties, and final concluding statements of the parties, filed June 26, 1978.

On August 31, 1978 the Hearing Board submitted a 137-page report to the Commission which summarized this record and outlined the significant issues raised by the participants. Also, responding to the Commission's request for the Board's views, the Board submitted on October 26, 1978 its Conclusions and Recommendations. The Board recommended that the Commission adopt as a final rule a modified Table S–3 proposed by the NRC staff, in which the majority of entries were unchanged from those in the interim rule. The Board also recommended that a "brief explanatory narrative" be adopted as part of the rule, which among other things would interpret the significance of the tabulated impacts in terms of environmental dose commitments. The Board's recommendations identified several aspects of the rule which in the Board's view should be improved upon during the general update of the fuel cycle rule.[14]

Shortly before the Board's recommendations were issued, the Commission announced that it would receive participants' written statements commenting on the rulemaking record and the Hearing Board's recommendations. Nine participants

[9] The Supreme Court's subsequent grant of certiorari automatically continued the stay of mandate pending completion of Supreme Court Action. The Supreme Court's remand and subsequent action by the court of appeals have left unresolved for the present the question whether the waste management and reprocessing portions of the original S–3 rule were legally sufficient. See note 8.

[10] Subsequently the Commission directed the Appeal Board to consider for the ten facilities affected by the terminated show cause proceedings "the particularized factual data essential to making a determination of the incremental effect, if any, that the use of the values in the interim rule would have on the NEPA cost-benefit balances for the particular facilities involved." 5 NRC 717, 7173 (1977). The Appeal Board found that fuel cycle impacts did not tilt the cost-benefit balance against any of the facilities in question. 6 NRC 25, 29–30, 6 NRC 33, 102–104, 6 NRC 206, 209 (1977), and concluded: "The effects assigned by the interim rule to the uranium fuel cycle are . . . extremely small (as the Commission itself has suggested). This being so, they could not possibly serve to call for the abandonment of any particular nuclear facility unless the cost-benefit balance for that facility was otherwise in virtual equipoise." 6 NRC at 104.

[11] On January 26, 1978 the Commission modified the procedures to allow participants to cross-examine witnesses on specific factual issues at the close of the legislative-type hearings, where it could be demonstrated with particularity that the procedure was necessary to prepare a record adequate for a sound decision. No cross-examination in fact occurred. After a special hearing to consider requests, the Board found that the requisite demonstrations had not been made.

[12] With regard to fuel cycle impacts not within the scope of the hearing, the notice observed that the staff had begun a general update which was expected to lead to a separate rulemaking proceeding. A proposed outline for this "update of WASH–1248" was announced by the staff on September 7, 1978. 43 Fed. Reg. 39801.

[13] The impacts from reprocessing, waste management and transportation of wastes given in the interim rule are maximized for either of the two fuel cycles considered (no reprocessing and reprocessing only to recover uranium). See note 1 to Table S–3, 10 CFR 51.20 (1978).

[14] See note 12 above.

submitted comments, including the NRC staff.[16] Several participants argued that the record did not support adoption of the modified Table S–3. New York State asserted that the record showed the model facilities on which the table was based were not economically feasible. Other opponents of the table argued that the tabulated impact values did not adequately reflect underlying uncertainties revealed by the record. In particular, they questioned basing reprocessing impacts on model facilities rather than past operating experience. The omission of technetium-99 releases from the table was also criticized. Several parties who opposed adopting the table stressed that dose commitments and health effects, economic and socioeconomic impacts, and cumulative impacts were not addressed by the table and were required for an adequate description of fuel cycle environmental impacts. These participants generally supported preparation of an explanatory narrative but urged a broader scope than the one proposed by the Board.

Other participants supported the Board's recommendation for adoption of the modified Table S–3 but questioned the need for an explanatory narrative. They pointed to procedural problems of providing adequate notice before a narrative could be incorporated as part of the rule. Some parties concluded, on the grounds that the D.C. Circuit had not criticized the portions of the original S–3 rule dealing with the front-end of the fuel cycle, that there was no legal requirement for a narrative or for consideration of fuel cycle environmental questions outside the scope of the original Table S–3.

The NRC staff favored adoption of the modified Table S–3 as a final rule but preferred that an explanatory narrative be deferred for preparation as part of the general update. The staff noted that explanatory material subject to litigation in individual licensing proceedings is presently introduced to accompany the use of Table S–3 in such proceedings and recommended that this practice continue.

On January 19, 1979 the Commission heard oral presentations from the commenters. These presentations provided a valuable elaboration of the parties' views but did not change the basic positions stated in the written comments. The Commission accepted brief supplemental written submissions following the oral presentations and then closed the record of this proceeding as of January 23, 1979.

[16] The nine commenters were Mr. Marvin Lewis, the Natural Resources Defense Council, the Sierra Club, the State of New York, the States of Ohio and Wisconsin, Baltimore Gas and Electric, *et al.*, Commonwealth Edison, *et al.*, the Tennessee Valley Authority, and the NRC staff.

III. Final Rulemaking

1. Adoption of the modified Table S–3

The Commission has found that except for technetium-99 releases the record supports adoption of the modified Table S–3 as a final rule, as recommended by the Hearing Board. The participants' comments and the Board's recommendations have made clear that the Table is not free of flaws, but for the reasons discussed below the Commission believes that these will not significantly impair the Table's usefulness as the starting point for considering fuel cycle impacts in individual reactor licensing proceedings.

To begin with, there can be little doubt that this rulemaking has been adequate from a procedural standpoint. The Supreme Court's *Vermont Yankee* decision confirmed that informal agency rulemaking is procedurally sufficient when the notice-and-comment requirements of the Administrative Procedure Act, 5 U.S.C. 553, are met. 435 U.S. 419 (1978). The fuel cycle rulemaking not only afforded these basic notice-and-comment procedures but also provided extensive additional written and oral procedures, including several not offered by the hearing board in the original S–3 rulemaking. A few participants expressed the view that the record might have been improved, had the Board exercised its discretion to permit cross-examination, but no one has argued that the record is legally deficient from a procedural standpoint.

As noted earlier, however, several comments to the Commission questioned whether the record provides sufficient evidence to support the numbers in the modified Table. The general thrust of these comments was that the model facilities analyzed by the staff were for one reason or another unacceptable as a basis for determining fuel cycle impacts. The Commission believes that the substance of these comments has been adequately addressed by the Hearing Board in the discussion supporting its recommendations. Conclusions and Recommendations of the Hearing Board, Docket RM–50–3. The issues of greatest importance or special concern to commenters are reviewed in the following subsections.

a. Economic Feasibility. The proposed rule clearly would be open to serious question if the model facilities on which the values in Table S–3 are based would be prohibitively expensive to build and operate. In response to the Board's request for evidence on economic feasibility, viewed in this narrow sense, the staff submitted cost estimates based on material from the GESMO proceeding.[16] From these estimates the Hearing Board found per-reactor costs of reprocessing and waste management to be on the order of ten percent of the total costs for building and operating an individual reactor. The Board concluded that such costs were not prohibitive. Recommendations, page 58.

Comments by the State of New York challenged the Board's conclusion that establishing fuel cycle costs at a few percent of total generating costs sufficed to demonstrate economic feasibility.[17] New York cited testimony by its own witnesses asserting that the economics of nuclear power are precarious and that back-end fuel cycle costs will tip this doubtful balance against the nuclear option. This evidence, New York concluded, "mandates a finding of economic infeasibility of the back end of the uranium fuel cycle."

The Commission believes New York missed the distinction between the broad issue of nuclear power economics and the much narrower question of economic feasibility of specific models for waste management and reprocessing. Whether nuclear power is good business is not an issue in this rulemaking. The fuel cycle rule will be used only when someone has decided, rightly, or wrongly, that nuclear power is sufficiently viable economically to warrant applying for a reactor license. Once the reactor has operated, back-end fuel cyle activities must be carried out, whatever the cost. This rulemaking addressed the environmental impact of those activities based on methods and facilities which could on technological grounds reasonably be employed. The economic feasibility question, correctly identified by the Hearing Board, is simply whether these methods might be so outlandishly expensive that there will be a "major incentive for reducing [costs] at the expense of increasing the radioactive effluents above the values * * * in Table S–3." Recommendations,

[16] Generic Environmental Statement on the Use of Recycle Plutonium in Mixed Oxide Fuels in Light Water Cooled Reactors, NUREG–0002, August 1976.

[17] Also, during the hearing and in a separate motion filed before the Commission on December 18, 1978, New York, together with Wisconsin and Ohio, urged that dollar value impacts should be brought within the scope of the S–3 proceeding. The matter of dollar value economic impacts is separate from the issue of economic feasibility. The Commission made clear earlier in an order issued February 9, 1978, Docket RM–50–3, that this rulemaking "was not intended to encompass a full economic analysis leading to inclusion of economic costs in the uranium fuel cycle rule." The Order left open the possibility that the detailed economic costs of the fuel cycle might be dealt with in a later generic rulemaking. The Commission will refer the States' motion to the staff for treatment as a petition for rulemaking pursuant to 10 CFR 2.802. To the extent that fuel cycle dollar value impacts are relevant to the cost-benefit balance for a reactor they may at present be considered in individual licensing proceedings.

page 58. The Commission believes that the fuel cycle cost estimates arrived at by the Hearing Board took adequate account of matters in controversy and provided a reasonable basis for the Board's conclusion that the staff's models are economically feasible in the sense described above.[18]

b. Waste Management and Disposal. In determining the impacts associated with waste management and disposal the staff assumed that high-level waste (or reactor spent fuel treated as waste) would be stored in interim facilities (water basins and retrievable surface storage facilities) for about twenty years and then disposed of by burial in a bedded salt geologic repository.[19] The staff's interim storage model was not seriously questioned at the hearing. The technology for storing spent fuel elements under water in pools is well established; radioactive releases to the environment have in practice been extremely small and may be expected to remain small, even if pool storage is protracted by delays in establishing disposal facilities. The Commission concludes that the staff analysis of interim storage impacts was reasonable. In any case, the values in Table S–3 would not be significantly affected by any reasonably foreseeable variations from the time periods and models for interim storage assumed by the staff.

Analysis of waste disposal necessarily involves greater uncertainty than interim storage because disposal technology has not yet been selected. Consistent with the court of appeals' ruling that it suffices to assess one credible waste disposal method, rather than the full spectrum of alternatives, NUREG–0116 chose to analyze "deep emplacement in a stable geologic medium (bedded salt) under the continental U.S." The staff concluded that this technology "has the greatest amount of substantive information available from which to summarize environmental impacts" and would be "reasonably representative of impacts that would result from any appropriately designed geological emplacement." NUREG–0116, page 2–9.

The waste repository impacts of greatest concern are radioactive effluents which might escape to the biosphere during the thousands of years which must elapse before radioactivity in the waste has dropped to an insignificant level. For spent fuel disposal the staff made the conservative assumption that fission-product gases in the spent fuel, including all tritium, krypton-85, carbon-14, and iodine-129, would be released during handling and emplacement of the waste prior to sealing of the repository.[20] This assumption reflects the possibility that the spent fuel storage canisters and the fuel rod cladding will be corroded by the salt during the period the repository is open (roughly 6 to 20 years), and volatile materials in the fuel will escape to the environment. The staff assumed, however, that after the repository is sealed there would be no further release of radioactive materials to the environment.[21]

With regard to this assumption of complete repository integrity, the Hearing Board identified as the major concern the question "whether water might enter, dissolve the radioactive materials, and transport them to the biosphere." The staff assumed such transport would not occur, for reasons summarized by the Board as "in part based on the fact that the salt in which the waste would be buried would have existed for millions of years free of water except for a small amount of entrapped brine, and could be expected to continue to so exist. The location would be one of low seismic and volcanic activity and with few resources important to man, so the probability of intrusion by nature or by humans would be small. Salt is plastic and would tend to heal some types of intrusions. Furthermore, if water were to reach the repository and dissolve the waste, natural barriers provided by media surrounding the salt would slow the rate of transport so that most of the radioactivity would decay before it would reach the biosphere." Conclusions and Recommendations of the Hearing Board, Docket RM–50–3, page 34.

The Commission finds that these characteristics of a bedded-salt repository afford a reasonable basis for the staff's conclusion that the repository can maintain its integrity, provided that sites meeting the selection criteria can in fact be found and developed. On this key issue the evidence in the record is tentative but favorable. At the hearing a witness for the U.S. Geological Survey testified that he believed it possible to find sites for repositories that would give the low release rates estimated by the staff. Transcript at 729. Although no specific location has yet been identified as meeting the criteria, the widespread distribution of salt deposits favors the view that suitable sites can be found.[22] Such general evidence, coupled with the absence of any strong argument that a site cannot be found, probably affords as strong a record as can be made on the issue until a specific site has been thoroughly investigated and found to be suitable.[23]

For these reasons and based on this record it is the Commission's judgment that a suitable bedded-salt repository site or its equivalent will be found, but the Commission notes and agrees with the Interagency Review Group on Waste Management that areas of uncertainty

[18] The Board's cost estimates took into account New York's vigorous objection to the staff's use of a 10 percent discount rate. The Board computed a range of estimated fuel cycle costs based on return on investment of 2 and 0 percent, suggested by New York as more realistic, and based its judgment on an overall cost estimate large enough to include the upper limit of the range. The Board also noted its view that costs of decommissioning a power reactor, a matter of controversy at the hearing, are facility-specific and should be considered in individual reactor proceedings rather than included among the costs of the fuel cycle activities which are the subject of the generic rule. The Commission finds the Board's reasoning correct on this point and confirms that reactor decommissioning costs are not relevant to this rulemaking.

[19] The program of interim storage followed by geologic disposal is in broad outline the same waste management model considered in the original fuel cycle rulemaking, but the record developed in the present proceeding is far more extensive, particularly with respect to disposal. Dr. Pittman's testimony at the original rulemaking in 1973 consisted largely of a description of a proposed retrievable surface storage facility for continuously monitored interim storage. Concerning ultimate disposal without further surveillance, Dr. Pittman noted that a major effort was underway to determine whether disposal in bedded salt was acceptable, but he did not describe the concept in any detail. In contrast, NUREG–0116, Section 4.4, provides a 30-page quantitative discussion of disposal of long-lived wastes in a bedded salt repository, with citations to many relevant technical documents prepared since 1973. The bedded salt concept was discussed extensively in written and oral testimony at the hearing. For example, the Board's oral examination of witnesses from the United States Geological Survey regarding the characteristics of salt beds as a repository medium occupies 37 pages of the hearing transcript. Tr. 699 ff. Docket RM–50–3. In addition, the present state of knowledge regarding nuclear waste disposal and its impacts has been extensively detailed in the Report to the President by the Interagency Review Group on Nuclear Waste Management ("IRG Report"), TID–29442 (March 1979) and the draft Subgroup Report on Alternative Strategies for the Isolation of Nuclear Waste, TID–28818 (Draft), October 1978.

[20] The numbers in Table S–3 reflect this assumed complete release. In the alternative that spent fuel is reprocessed rather than disposed of directly, the staff's reprocessing model assumed complete release of tritium, krypton-85, and carbon-14 but provided for capture of most of the iodine-129. The value for iodine-129 that appears in Table S–3 is for total release.

[21] NUREG–0116 states (pages 2–10, 2–11): "Long term impacts will be nonexistent if the repository performs as expected and maintains the wastes in isolation. The rationale . . . follows a simple line: since the [bedded salt] formation has been demonstrably undisturbed for many millions of years, there is reason to believe that it will remain undisturbed into the future, even though mildly modified by placing the wastes into it." Supplementing this basic rationale, Section 4.4 of NUREG–0116 provides a detailed review of reasons for believing that a bedded salt disposal system, suitably selected, will prevent significant releases for the full period needed for waste detoxification.

[22] NUREG–0116 notes that salt deposits have been found in 24 of the 50 States. Sec. 4.4.1.2.

[23] In view of the often-cited experience at Lyons, Kansas, it is worth mentioning that the failure of a particular site to meet selection criteria, though discouraging, cannot of itself disprove the feasibility of the bedded-salt repository concept. At Lyons, Kansas, an initially promising site later proved unsuitable because of previously undiscovered bore holes and adjacent mining operations that compromised the integrity of the site. These problems were specific to the site rather than inherent in the concept.

remain regarding both the likelihood of finding a site and the probability that it will perform as expected.[34] The Commission's judgment in this regard is limited to the purposes for which this proceeding was brought—namely to specify for NEPA purposes the environmental impacts to be considered in individual licensing proceedings as part of the environmental cost-benefit analysis for a power reactor. It is in no way intended to be a judgment for choosing among alternative technologies for waste disposal. That kind of judgment is in the first instance to be made by the Department of Energy and will be subject to further review in a Commission licensing proceeding when a particular proposal comes before us. Nor is the Commission making judgments in this proceeding as to the likelihood of waste disposal being accomplished safely. That issue has been addressed separately by the Commission.[35]

Furthermore, the Commission intends in the near future to conduct a generic proceeding to reassess the outlook for the availability of safe waste disposal methods in light of new data and recent developments in the Federal waste management program.[36]

In view of the uncertainties noted regarding waste disposal, the question then arises whether these uncertainties can or should be reflected explicitly in the fuel cycle rule. The Commission has concluded that the rule should not be so modified. On the individual reactor licensing level, where the proceedings deal with fuel cycle issues only peripherally, the Commission sees no advantage in having licensing boards repeatedly weigh for themselves the effect of uncertainties on the selection of fuel cycle impacts for use in cost-benefit balancing. This is a generic question properly dealt with in this rulemaking as part of choosing what impact values should go into the fuel cycle rule. The Commission concludes, having noted that uncertainties exist, that for the limited purpose of the fuel cycle rule it is reasonable to base impacts on the assumption which the Commission believes the probabilities favor, *i.e.*, that bedded-salt repository sites can be found which will provide effective isolation of radioactive waste from the biosphere.[37]

Assuming an initially suitable site is found, the Board noted that particular concern had been expressed regarding the possibility that heat released by radioactive decays in the waste might alter conditions in the salt so as to give access to water and promote migration of the waste. As the Board points out in its recommendations, however, the average temperature rises in the salt will depend on the density of waste emplacement. Increasing the amount of land committed to the repository reduces this density and may be expected to be an effective measure for meeting concerns about temperature effects. During the proceeding the staff proposed a modification to Table S–3 raising the acreage committed to waste disposal. This modification is included in the table adopted as the final rule.

Even allowing for some eventual leakage of water into the repository, information in the record indicates that transport of materials out of the repository area would take tens of thousands of years. The only apparent natural mechanisms cited which might reasonably cause major releases involved very low probability catastrophic events such as a large meteor strike on the repository or formation of new geologic faulting intersecting the area. Releases through accidential intrusion by man remain possible but in the Commission's view unlikely since casual intrusions should be virtually impossible and sites should be selected in areas offering little incentive for deliberate intrusion in search of natural resources. Given the staff's assumption that volatile fission products are totally released before the repository is sealed, the Commission finds that taking post-sealing releases as zero does not significantly reduce the overall conservatism of the table.

In summary, the Commission concludes, based on the above considerations and the more detailed analysis given in the Board's recommendations, that the staff's model for assessing impacts of waste disposal is reasonable and adequate for the purposes of the fuel cycle rule.

c. *Reprocessing.* The reprocessing alternative considered in this proceeding involved reprocessing of spent fuel for purposes other than recycle of plutonium.[38] In considering this alternative, the Commission expresses no view on the likelihood that

[34] These residual uncertainties were noted in the Report to the President by the Interagency Review Group on Waste Management, TID–29442, March 1979, which was discussed in draft form at the January 19, 1979 oral presentation. Responding to comments on the feasibility of waste disposal in mined repositories, the IRG report states on page 42: "No scientific or technical reason is known that would prevent identifying a site that is suitable for a repository provided that the systems view is utilized vigorously to evaluate the suitability of sites and designs, and in minimizing the influence of future human activities. A suitable site is one at which a repository would meet predetermined criteria and would provide a high degree of assurance that radioactive waste can be successfully isolated from the biosphere for periods of thousands of years. For periods beyond a few thousand years, our capability to assess the performance of the repository diminishes and the degree of assurance is therefore reduced. The feasibility of safely disposing of high level waste in mined repositories can only be assessed on the basis of specific investigations at and determinations of suitability at particular sites. * * * [E]ven at the time of decommissioning some uncertainty about repository performance will still exist." The Commission believes the IRG Report's view that suitable sites can be identified but that uncertainty about repository performance cannot be entirely eliminated is consistent with the record compiled in the fuel cycle rulemaking.

[35] 42 *Fed. Reg.* 34391, July 5, 1977. See also *Natural Resources Defense Council* v. *NRC*, 582 F. 2d 166 (2d Cir. 1978).

[36] The immediate occasion for this proceeding is the D.C. Circuit's remand to the Commission of *State of Minnesota* v. *NRC*, Nos. 78–1269 and 78–2032 (May 23, 1979) to consider whether there is reasonable assurance that an off-site storage solution for nuclear wastes will be available by the years 2007–09, the expiration dates for licenses of certain nuclear plants where the Commission has granted permits to expand on-site spent fuel capacities and if not, whether there is reasonable assurance that the fuel can be stored safely at the site beyond those dates. A continuing reassessment of the Commission's views on waste disposal is part of the commitment which the Commission has made to Congress. The final IRG report, which was available to the fuel cycle rulemaking participants only at the close of the rulemaking and only in draft form, will be part of the new information which the Commission will consider in its reassessment. The Commission will announce at a later date the specific procedures to be adopted for this proceeding and its precise scope.

[37] Even if, contrary to the evidence in the record and the Commission's expectation, bedded-salt repositories should ultimately be found not adequate, the strong incentive to develop sound waste disposal methods and the major effort now directed to this goal make it likely that a means of effective isolation will be found among the many geologic disposal techniques being considered. The IRG Report (see note 24 above) notes on page 3 that "increased levels of support . . . and broader range of disciplines involved have led to a greatly increased accumulation of knowledge within the [waste management] program. The current rate of growth of knowledge is very large."

[38] On December 23, 1977, in response to President Carter's nuclear non-proliferation policy, the Commission terminated proceedings on pending or future plutonium recycle-relat d license applications and halted proceedings on the Generic Environmental Statement on Mixed Oxide Fuel (GESMO) to determine under what condition uranium and plutonium might be recycled from spent light water reactor fuel and fabricated into fresh mixed oxide fuel on a wide scale. In the Matter of Mixed Oxide Fuel, 6 NRC 861 (1977). See also 7 NRC 711 (1978).

such reprocessing will take place.[30] Under this alternative the staff assumed that spent fuel after 160 days cooling at the reactor would be shipped to a model reprocessing facility, where the uranium, plutonium, and fission products would be separated by the Purex solvent extraction process into three liquid fractions. The uranium would be converted to uranium hexafluoride for recycling at an enrichment plant. The plutonium, still containing about five percent of the fission products to deter diversion, would be converted to plutonium oxide and packaged for disposal in a Federal waste repository. The high-level liquid waste (HLLW), containing the bulk of the fission products, would be stored up to five years in tanks and then calcined and formed into glass for repository disposal.

No significant question was raised at the hearing regarding the staff's choice of processes, but considerable controversy arose concerning the staff's assumption that the performance of the model facility would show a significant improvement over previous commercial reprocessing experience. The only commercial experience in the United States with reprocessing spent uranium oxide fuel from light water reactors was obtained at the Nuclear Fuel Services plant (NFS) in West Valley, New York. This relatively small plant, which is no longer in operation, had the capacity to process on the order of one metric ton of spent fuel per day but in practice achieved a capacity factor of only 0.33 as compared with an expected 0.8. A high level of radioactive effluent releases was experienced during the NFS operation.

The staff based its reprocessing impact estimates on performance predictions for future facilities rather than on the NFS operation. The staff's model reprocessing facility is intended to be representative of the as-yet-unoperated Allied Gulf Nuclear Service Plant at Barnwell, South Carolina, built with a capacity of 5 metric tons/day, and Exxon Nuclear's proposed Nuclear Fuel Recovery and Recycling Center, designed for an ultimate capacity of 7 metric tons/day. The staff assumed that the model facility would operate with a capacity factor of 0.8 and would reprocess spent fuel from 57 model reactors.[30] The staff assumed that effluent control measures proposed for the model facility would achieve for several radioactive effluents a degree of decontamination greatly exceeding that demonstrated at NFS.[31]

The Hearing Board found that equipment was presently available or reasonably likely to be developed that would enable operation of a reprocessing facility on the scale assumed by the staff. The Board noted that design improvements intended to overcome operational difficulties experienced at NFS have been incorporated in Barnwell and that in any case no problems identified in the record appeared too difficult for solution by sound engineering and additional experience. The Board found that the capacity factor of 0.8 assumed by the staff was probably too optimistic but that a factor of 0.7 was likely to be achieved. Even with this lower capacity factor, the Board found that because the staff had probably overestimated the amount of spent fuel discharged annually per reactor the staff's model facility would still be able to reprocess spent fuel from 57 reactors, as assumed. In any event, the Board observed, radioactive releases and natural gas consumption, which are the major reprocessing impact contributions to Table S–3, are primarily dependent on the amount of spent fuel processed per reference reactor year and are not much affected by reprocessing plant size or capacity factor.

With regard to radioactive effluents from reprocessing plants, the Board found that the impact values "are reasonable and in most instances are overestimates of the impacts that would actually occur." Recommendations at 17. The Board noted that the staff assumed spent fuel would be reprocessed after 160 days decay, while in all likelihood any spent fuel actually reprocessed in the foreseeable future will probably have been stored five years or more following removal from the reactor. In this period iodine-131 (8-day half-life) will have decayed away, ruthenium-106 (368-day half-life) will be reduced by a factor of about 30, and tritium and krypton-85 will be reduced by a factor of 1.3 or more.

The Board observed that the control measures which the staff relied on to achieve decontamination factors greatly superior to NFS experience "have not been operated in the combinations proposed, and some have been tested only in the laboratory." Recommendations at 20. Nevertheless the Board found these tests sufficiently convincing to support the staff's conclusion that the assumed decontamination factors can be achieved and probably surpassed. The low decontamination factors at NFS were, in the Board's view, largely caused by faulty design and perhaps faulty operation. The Board concluded that the staff had probably overestimated the amounts of ruthenium, non-volatile fission products and transuranic nuclides likely to be released during normal operation of a model reprocessing facility.[32]

In its comments to the Commission, the Sierra Club stressed its view that reprocessing impacts (including occupational exposures) should be based on the NFS historical experience rather than on "idealized hypothetical facilities," or alternatively that the table should be amended to include two sets of reprocessing estimates, one based on historical experience and the other on model facilities. The Sierra Club also called attention to the omission of technetium-99 releases from Table S–3 and argued that these releases would be significant.[33]

The Commission does not accept the view that historical experience should be the definitive measure for reprocessing impacts. The Commission finds that the staff and the Board were reasonable in recommending that reprocessing impact estimates take account of expected technological improvements, especially where most if not all of those improvements are not simply "hypothetical" but are already designed, constructed, and installed in an existing facility (Barnwell). As the

[30] The Commission's instructions to the S–3 Board of January 28, 1978 (Commissioner Gilinsky dissenting) noted that "Although the 'once-through' fuel cycle is currently the reference case for United States policymaking purposes, the possibility of some form of reprocessing for waste management purposes is not excluded and therefore the Commission decided that this alternative should be included as well. The Commission paid particular attention to the fact that the spent fuel processing surveyed in this proceeding would treat plutonium solely as a waste product and would not make plutonium available in a form suitable for use as reactor fuel. The Commission emphasized that its refusal to cut back the scope of the fuel cycle rulemaking is not to be allowed to convert this rulemaking into a GESMO proceeding."

[31] As of March 1979 there were seventy light water power reactors licensed to operate in the United States.

[32] These include ruthenium-106, strontium-90, cesium-137, plutonium and other transuranic nuclides. The staff assumed decontamination factors on the order of 10^8 Decontamination factors of about 10^8 were measured at NFS for ruthenium, strontium, and cesium. See Recommendations at 22.

[33] With regard to volatile radionuclides, as noted previously (see note 20), the staff assumed all tritium, krypton-85, and carbon-14 in spent fuel would be released, either in reprocessing or during the operating phase of a waste disposal repository. The Board found the release values for krypton-85 and tritium to be overestimates and the carbon-14 emission value of 24 curies to be "reasonable." The Board found that the staff had also overestimated iodine-129 releases from reprocessing, but this estimate is of no consequence since the iodine-129 value in Table S–3 is based on total releases from spent fuel during waste repository operation.

[34] Technetium-99 is a relatively volatile radionuclide with a half-life of 213,000 years. The Hearing Board found that the assumption that all iodine-129 is released "tends to compensate" for the neglect of technetium. The Board concluded also that technetium releases could probably be contained at least as well as ruthenium releases, which in the Board's view the staff had overestimated. The Board recommended that technetium release impacts be considered explicitly as part of the general update.

comments pointed out, Barnwell has not operated, and there is always uncertainty whether untested facilities will work as well as planned. But even if one agrees with the observation made in several of the comments that in nuclear technology things almost never work as well as planned, it would seem that reasonable allowance for this factor is included within the staff's many conservatisms and overestimates of releases noted by the Hearing Board.

Furthermore, the Commission does not believe that including in the table a separate set of impact estimates based on NFS experience would illuminate the uncertainty issue. NFS impacts are not likely to be a meaningful measure, even as a limiting case. It is clear from the general dissatisfaction with the NFS facility that further commercial reprocessing ventures will not be attempted unless their proponents have sound reason to expect much better performance, including reduced occupational exposure.[34]

Accordingly, the Commission concludes, as in the matter of waste disposal uncertainties, that uncertainties in reprocessing impacts should be resolved within this rulemaking by adopting tabulated impacts based on model facilities using technology most likely to be employed. Except for technetium-99 releases, the Commission has therefore found that the modified Table S–3 provides an adequate treatment of reprocessing impacts. It appears from the record that technetium releases from the fuel cycle will occur but are not included in the table. The Commission believes that Table S–3 should be supplemented during the general update by inclusion of an appropriate value for technetium releases. Pending this supplementation, both the magnitude and the environmental significance of technetium releases from back end fuel cycle activities may be considered in individual reactor licensing proceedings which have not been noticed for hearing on environmental matters prior to the effective date of this final rule. In view of the Hearing Board's conclusion that the conservative assumption of complete release of iodine-129 tends to compensate for the omission of technetium from Table S–3, the Commission finds it unnecessary to reopen closed proceedings or to disturb consideration of environmental issues in presently pending proceedings to provide for consideration of technetium-99 releases.

2. The Explanatory Narrative.

As the comments indicate, this rulemaking grew well beyond a narrow inquiry into the evidentiary basis supporting the numbers tabulated in the interim rule. The broader perspective taken by the participants and the Hearing Board has helped clarify many aspects of fuel cycle environmental impacts not covered by Table S–3 which need to be addressed, at least conceptually, in a comprehensive fuel cycle rule. Until such a rule is developed important generic fuel cycle issues must continue to be litigated in individual reactor licensing proceedings. These issues include—but are not necessarily limited to—environmental dose commitments and health effects from fuel cycle releases, fuel cycle socioeconomic impacts, and possible cumulative impacts. Pending further treatment by rulemaking, the NRC staff is directed to address these matters in the environmental analysis accompanying a proposal to issue a limited work authorization, construction permit, or operating license for a power reactor.

The Commission has accepted the Hearing Board's recommendation that an explanatory narrative which addresses these subjects should be prepared and adopted as part of the fuel cycle rule. Although such a narrative is not legally required, provided an adequate description of fuel cycle impacts is given in individual proceedings, the same reasons which favor treatment of fuel cycle impacts by generic rulemaking also favor evaluating the significance of those impacts by rulemaking, rather than by repeated adjudication. The Commission agrees, however, that adoption of a narrative by rulemaking will require adequate notice and opportunity for public comment and therefore cannot be done without a further proceeding. Since the narrative must address important basic issues in arriving at a method for evaluating the significance of fuel cycle impacts,[35] the Commission has determined that such a proceeding should begin promptly.

The Commission has directed the staff to prepare by October 1, 1979, a draft narrative for the Commission's review prior to issuance for public comment.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the National Environmental Policy Act of 1969, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendment to 10 CFR Part 51 is published as a document subject to codification, to be effective on September 4, 1979.

Separate Views of Commissioner Bradford on S–3

I

I am concurring in the latest version of the S–3 table with the understanding that it is to be extensively supplemented. Today's decision does improve somewhat on the present interim version. However, it remains a document with four weaknesses that will have to be improved through the promised narrative and update proceeding. The weaknesses are the zero release repository judgment, the reprocessing scenario, the procedural underpinning, and the absence of a clear statement of the health effects and time commitments involved. Additionally, I do not agree with the ambiguous and pointless restriction on the litigation of the technetium issue and would prefer to handle it as was agreed to by four Commissioners on May 3, 1979.

I can concur in the "zero release" number only because it is better founded than the same figure in the present interim version, and because, as the Commission states, this assumption does not appear to affect the S–3 table's overall conservatism. Nonetheless, there are uncertainties here, and the Board's summary of the record has not done them justice.[1] The forthcoming narrative will, in my view, need to address this subject.

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[34] Thus the NFS facility is not representative of "existing technology" in the sense of an ongoing activity which will continue at a present level of impact until technical breakthroughs occur. The court of appeals' comment, 547 F. 2d 638, note 13, noted by the Sierra Club, that it might be desirable to have alternative impact estimates, one "based only on existing technology" and another which takes account of anticipated developments, does not in the Commission's view apply to the reprocessing situation as it now exists. The court of appeals also stated that it had "no occasion in this case to decide whether a court could ever require such a procedure." *Id.*

[35] Among these issues is the question of the time period over which dose commitments from long-lived radioactive effluents should be evaluated. The court of appeals observed with regard to waste disposal that: "[T]he toxic life of the waste under discussion far exceeds the life of the plant being licensed. The environmental effects to be considered are those flowing from reprocessing and passive storage for the full detoxification period." 547 F. 2d 639, note 12. The analysis required by NEPA is, of course, subject to a rule of reason. *See Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 551 (1978); NRDC v. Morton, 458 F. 2d 827, 837 (D.C. Cir. 1972).* How dose commitment evaluations over extended periods of time might be performed and what their significance might be are subjects which the Commission expects an explanatory narrative would address.

[1] See for example, Transcript, p. 729. The Commission improves upon the Board's understatement in its Footnote 24, p. 40. However, the IRC report itself at that point contains a dissenting view from members who felt that insufficient attention was given to "significant gaps and uncertainties in our current technical understanding."

Furthermore, I think that the Commission goes too far in terming its assumption that a "bedded salt repository or its equivalent will be found" to be a "judgment." I think that little more can be said by a prudent regulatory agency at this time in the face of this record and the general uncertainty than that the direction of current federal programs makes a bedded salt repository a responsible working assumption for NEPA purposes. That is really all that I think the staff testimony supports.[2]

More seriously, I continue to disassociate myself from the optimistic assessment of the waste management program cited by the majority that is in 42 Fed. Reg. 34391.[3] In July 1977, the Commission reached a sweeping conclusion on the sufficiency of what then passed for a waste management program without benefit even of a notice and comment proceeding, never mind a formal review. For this Statement of Considerations to reference that denial of a requested rulemaking as an expression of a Commission view on the safety of a waste repository proceeding is procedural farce of a low order. It should not be done here, especially in light of the commitment to a new generic proceeding.

As to reprocessing, I have concluded that Commissioner Gilinsky was in many respects correct in his dissenting views from our January 26, 1978 Memorandum on the scope of this rulemaking. Nevertheless, the record has now been built on what may be an unlikely case, and it seems to me the Commission's decision so circumscribes it that the worst harms foreseen by Commissioner Gilinsky cannot result from any responsible reading of the current Statement of Considerations.

II

By memorandum of January 26, 1978, to the Fuel Cycle Rulemaking Hearing Board, the Commission ordered that the Board entertain requests for cross-examination of particular witnesses on specific factual issues where a showing could be made with particularity that this procedure was necessary for an adequate record. While the Commission left the decisions on cross-examination to the sole descretion of the Hearing Board, it expected that the Hearing Board would apply the procedures "in a sensitive and careful fashion so as to assure the ventilation and consideration of waste management issues called for in *NRDC v. NRC*, 547 F.2d 633 (D.C. Cir. 1976)." I dissented from the extraordinary discretion delegated to the Board and the restrictive criteria for cross-examination.

The Board was neither sensitive nor careful in its decision to deny all cross-examination. Rather than assuring the ventilation and consideration of waste management and disposal issues, the Board stifled full exploration of crucial and difficult subjects even when the staff, to its credit, did not object.

The denial of cross-examination on two particular issues serves to illustrate the consequences. The Sierra Club sought to cross-examine several witnesses on the release of technetium from the waste management and disposal fuel cycle facilities. The Board denied the request in general terms,[4] stating that many of the matters were not involved in this proceeding or not in serious dispute. Moreover, the Board said its review indicated that each subject was "fully ventilated" through other procedures. The Commission's finding on technetium rejects these conclusions of the Board. The Commission found that technetium releases should be included in Table S-3. However, because there was not sufficient evidence in the record to derive a release figure, the Commission ordered that the issue be litigable in individual proceedings. Thus the Commission, contrary to the Board, viewed the release of technetium both as being insufficiently serious dispute and so inadequately ventilated as to require further litigation.

By avoiding a full record on technetium, the Board has shown the futility of the Commission's procedural shortcut. As I noted in my January 26, 1978 dissent, the delays caused by withholding cross-examination can far exceed the "delays" inherent in cross-examination. The issue of technetium release now may be litigated in every individual licensing proceeding. Instead of being cross-examined once, staff witnesses are potentially subject to cross-examination in many proceedings, with licensing boards, the Appeal Board, and possibly the Commission reviewing the record of each case.

The Board also refused to allow cross-examination regarding the uncertainties of bedded salt as a waste medium. This refusal was particularly unfortunate since, as noted by the petitioner for cross-examination, it came immediately after the DOE Task Force on Nuclear Waste Management stated it was "aware of scientific issues concerning the adequacy of salt as suitable geologic medium for emplacement of concentrated waste exhibiting high surface temperatures." (Report of Task Force for Review of Nuclear Waste Management, U.S. DOE at 9, February 1978).

One of the issues on which NRDC requested cross-examination was the staff's lack of analysis of media other than salt. Now, without this inquiry, the Commission makes a "judgment" that an "equivalent" to a bedded salt repository will be found. This statement rests on some statements from the IRG Report, issued after the hearing was over.[5] Thus the Commission has, through the dubious procedural device of its "irrevocable delegation," treated a subordinate board like a distant and separate part of the government and has thereby cost itself any chance to correct the weakness of the record.

In refusing to permit cross-examination on waste disposal, the Board has kept perfect the past record of the Commission's obsessive need not to know about the uncertainties regarding its waste disposal assumptions. While continuing to express "confidence" that the wastes can and will be disposed of safely and while judging that a bedded salt repository or its equivalent will be found which will have a zero release after it is sealed, the Commission has never allowed a proceeding to take place where witnesses supporting these views could be cross-examined.

While this approach has been found by courts not to be inconsistent with Congressional intent, it is inconsistent with an accurate appraisal of the consequences of new licensing actions. I would rather that this agency had looked less for the legally acceptable minimum procedures and more for a process that gave the Commission and ultimately the public the most accurate possible conception of the environmental commitments being made on its behalf.

Separate Views of Commissioner Gilinsky on Final Adoption of the S-3 Rule

In February the Commission decided to go forward with a final table of nuclear fuel cycle environmental impacts (S-3) without waiting for the narrative explanation which it directed the NRC staff to prepare to accompany the table. Without such an explanation of the effluent release values in terms of radiological dose commitments and associated health effects, there is not much use a licensing board can make of the table in deciding whether or not to approve a license. The new table is in fact almost identical to the interim table in use now. The major effect of adopting a final rule now without an explanatory narrative is to relieve pressure for the narrative's preparation. To avoid this result I earlier urged the Commission to hold up promulgation of a final rule until the narrative is available and approved by the Commission.

At issue is each reactor's share of effluent releases from the operation of the overall nuclear fuel cycle. But the table values do not depend on the characteristics of the specific powerplant that is the subject of a licensing proceeding—they do not distinguish among reactors. As a consequence, it is virtually inconceivable that the table would affect the outcome of any such a licensing proceeding before one of our boards. A finding that the reactor's share of the fuel cycle effluents outweighs the benefits of the plant in terms of the electric power it delivers is tantamount to a conclusion that no reactor should be licensed.[1] As a practical matter, such a finding, reaching the very core of NRC decisionmaking could—and should—come only from the Commission itself. If there is doubt about the outcome of this question the Commission should address it directly. By not addressing it and by dealing instead with the fuel cycle environmental impacts in reactor licensing licensing proceedings by handing the licensing boards a table of effluent releases the Commission is in effect saying that these impacts should not affect the outcome. That may in fact be the right conclusion; but if it is, the Commission should state it clearly and not hide behind a table of numbers.

There is another reason for my disagreement with the Commission's action in approving the final rule. I would not adopt

[2] Transcript, p. 534, 575.

[3] Memorandum and Order, p. 41.

[4] Memorandum and Order, May 4, 1978.

[5] Report to the President by the Interagency Review Group on Waste Management, TID-29442, March 1979.

[1] The notion that the fuel cycle effluents add to one side of the "NEPA balance" and thus might tip it in some cases and not in others is naive.

at least one of the values in the table—the zero expected release from a high level waste repository. I am concerned that the Commission's expressed confidence in the *perfect* long term operation of such a waste depository may be misplaced, especially in view of its being based on a general examination by the Board in this proceeding of the bedded salt repository concept.

In this regard, I note that the D.C. Circuit Court of Appeals in *Minnesota* v. *NRC* has remanded to the Commission the question of whether there is reasonable assurance that wastes can be disposed of safely and at what point in time disposal can reasonably be effected. I think that the generic proceeding which the Commission plans to conduct in response to the D.C. Circuit's decision will give us an appropriate vehicle for a thorough-going evaluation of the problems involved in the government's commitment to a waste disposal solution and the likelihood that such a program is not only feasible but is also on course.

No such repository has yet operated. The prospective constructors of such a repository have not yet agreed on a design or even chosen a geologic medium. It seems anomalous, at this stage, for the regulators to express more confidence on this score than the repository designers and builders themselves have expressed.

I would add two brief comments. I previously argued that there was no need to include in this analysis an option for reprocessing, especially the contrived reprocessing mode which was considered in this hearing. The inclusion of this option has indeed complicated and lengthened the proceeding.

Also, I have come to agree with Commissioner Bradford that the Commission should not have delegated to the S–3 Hearing Board the discretion to make final determinations on whether or not to allow cross-examination on issues arising in the course of the proceeding.

45 FR 74693
Published 11/12/80
Effective 11/28/80

Licensing Requirements for the Storage of Spent Fuel in an Independent Fuel Spent Storage Installation

See Part 72 Statements of Consideration

46 FR 13971
Published 2/25/81
Effective 3/27/81

Disposal of High–Level Radioactive Wastes in Geologic Repositories: Licensing Procedures

See Part 60 Statements of Consideration

46 FR 28630
Published 5/28/81
Effective 6/29/81*

10 CFR Part 51

Alternative Site Issues in Operating License Proceedings

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations in 10 CFR Part 51, "Licensing and Regulatory Policy and Procedures for Environmental Protection," to provide that, for National Environmental Policy Act (NEPA) purposes, alternative sites will not be considered in operating license reviews for nuclear power plants and need not be addressed by operating license applicants in their environmental reports submitted to the NRC at the operating license stage. After review of public comment the Commission has concluded that by the time the operating license application has been submitted to the NRC staff for review, the alternative of siting the nuclear power plant elsewhere is no longer likely to be a reasonable alternative for the purposes of NEPA.

EFFECTIVE DATE: June 25, 1981.

FOR FURTHER INFORMATION CONTACT: Bruce A. Berson, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (301) 492–7678.

SUPPLEMENTARY INFORMATION: On April 9, 1980, the Nuclear Regulatory Commission published in the **Federal Register** (45 FR 24168) a proposed amendment to its regulations, 10 CFR Part 51, "Licensing and Regulatory Policy and Procedures for Environmental Protection," to provide procedures and performance criteria for the review of alternative sites for nuclear power plants under the National Environmental Policy Act of 1969 (NEPA). The proposed rule specified (1) information requirements for applying for an alternative site review by the Commission, (2) the timing of Commission review, (3) the region of interest to be considered in selecting sites, (4) criteria for the selection of sites, (5) criteria for comparing a proposed site with alternative sites, and (6) requirements for reopening an alternative site decision. Minor conforming amendments to 10 CFR Parts 2 and 50, "Rules of Practice for Domestic Licensing Proceedings" and "Domestic Licensing of Production and Utilization Facilities," respectively, were also proposed. Interested persons were invited to submit written comments on the proposed amendments by June 9, 1980.

Twenty-seven letters of public comment were received on the proposed amendments. The Commission has carefully considered the comments regarding the proposed requirements for reopening the alternative site question after a favorable decision at the construction permit or early site review stage (Item 6 above) and has decided to take final action on this issue, insofar as it relates to operating license (OL) proceedings, while the staff continues working on the other issues raised in the notice of proposed rulemaking. For the reasons discussed below, the Commission has determined that alternative site issues decided by the Commission and its adjudicatory tribunals (Atomic Safety and Licensing Boards and Atomic Safety and Licensing Appeal Boards) as part of construction permit (CP) or early site review proceedings may not be reopened at the operating license stage.[1] The proposed rule has been revised accordingly. In addition, a minor conforming amendment to 10 CFR 51.21 makes clear that applicants for operating licenses need not address alternative sites in environmental reports submitted to the NRC at the operating license stage.

Paragraph VIII.1 of the proposed Appendix A to 10 CFR Part 51 provided that "[A] reopening and reconsideration of the alternative site decision after a final limited work authorization or construction permit will be permitted only upon a reasonable showing that there exists significant new information that could substantially affect the earlier decision."[2] The rationale and discussion supporting this aspect of the proposed rule provided that:

At some point after issuance of the CP, the alternative of siting the nuclear power plant elsewhere likely will no longer be a reasonable alternative for the purposes of NEPA. That is, there is a point where comparative forward costs and the temporal proximity to the provision of needed (or desirably

* Correction 46 FR 29457

[1] The Commission will address the standards for reopening the alternative site issue prior to the OL stage when it considers the remainder of the proposed rule.

[2] 45 FR 24177, column 3 (April 9, 1980). The remainder of proposed paragraph VIII.1 and paragraph VIII.2 address questions pertaining to the treatment of the costs of delay and of moving to another site. Proposed paragraph VIII.3 pertains to the procedures applicable when two sites within a region have received a favorable NRC decision on alternative sites. These particular issues are inextricably interwoven with other aspects of the proposed rule. The Commission will consider these questions when the remainder of the rule is before it. Hence, the Commission expresses no view on the merits of these issues at this time.

substitutable) power so favor the partially constructed site that, there likely is no real possibility that the nonsafety-related considerations at an alternative site would be obviously superior to the proposed site. At that point, the reconsideration of alternative sites likely would not be required, unless the proposed site has been judged unsuitable for some safety or environmental reason.

Of the twenty-seven commenters, six, all representing the nuclear industry, addressed this particular aspect of the proposed rule in their letters. Two commenters recommend that the proposed rule be clarified to provide that the "new information" required to support a reopening of the alternative site decision should be limited to new information pertinent to the proposed site and not include information relating to an alternative site. Two other commenters called for more explicit guidance as to what constitutes "a reasonable showing that there exists significant new information that could substantially affect the initial decision." One of these commenters recommends that the alternative site issue should be reopened only when there is *definite* evidence showing there exists significant new information. The fifth and sixth commenters also call for more stringent criteria for reopening the inquiry. The fifth commenter recommends that the criteria in 10 CFR 2.606(b)(2) for reopening a partial initial decision on site suitability issues be followed and the sixth commenter would prohibit reopening unless the person seeking reopening makes a *prima facie* case, based upon new information, that the previously approved site is unsuitable.

The Commission agrees with the general thrust of these comments, and, indeed, now believes it clear that once the operating license stage has been reached, the alternative site question should not be an issue. This conclusion is grounded in the rationale and basis supporting the proposed rule, i.e., that at some point after issuance of the CP, the alternative of siting the nuclear power plant elsewhere is no longer likely to be a reasonable alternative for the purpose of NEPA.[3] The Commission believes that this point has clearly been reached, if not passed, by the time the OL application has been submitted to the NRC staff for review. Typically, an operating license application is submitted to the NRC staff within 3 years of the estimated construction completion date. Construction is usually about 35-65 percent complete at this time (depending upon the number of units to be built at the site) and a corresponding portion of the total construction costs have already been incurred. Major construction related environmental impacts have already occurred at the site and by the time the staff has completed its review of the application and the operating license hearings begin,[4] the plant will be even further along. Given this factual background, the Commission cannot readily conceive of a situation where new information concerning the proposed site could be of such significance as to tilt the cost-benefit balance in favor of an alternative site. (In any event, 10 CFR 2.758 of the Commission's regulations would permit an exception to or waiver of the rule in particular cases if special circumstances are shown.)

These practical considerations have also met the test of experience. Since 1972 the Commission has commenced or completed more than 50 operating license proceedings. During this time, neither the Commission nor its adjudicatory tribunals have been called upon to resolve in an OL proceeding an issue regarding alternative sites and the Commission is unaware that any party to an OL proceeding has even raised the issue as a possible contention; no contentions on alternative sites are now pending before the Commission or its licensing boards in on-going operating license proceedings.

Since the Commission finds that new information at the operating license stage is very unlikely to upset the prior conclusions concerning alternative sites, the Commission finds it appropriate, for the reasons stated above, to resolve this issue through rulemaking. Accordingly, the Commission is revising the proposed rule to preclude consideration of alternative site issues in operating license proceedings.[5] The standards for reopening the alternative site issue at an earlier stage of the Commission's adjudicatory process will be considered when action on the remainder of the proposed rule is taken. In addition, a minor conforming amendment to 10 CFR 51.21 makes clear that applicants for operating licenses need not address alternate sites in environmental reports submitted to the NRC at the operating license stage. Application of the revised rule to operating license proceedings may be waived only in accordance with the procedures set forth in 10 CFR 2.758 of the regulations, "Consideration of Commission rules and regulations in adjudicatory proceedings."

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 51, are published as a document subject to codification.

[3] Judicial precedent makes clear that NEPA requires agency decisionmakers to only consider reasonable alternatives. *Friends of the Earth v. Coleman*, 513 F. 2d 295 (9th Cir. 1975); *Natural Resources Defense Council v. Morton*, 458 F. 2d 827 (D.C. Cir. 1972). This "rule of reason" has been recognized by the Commission. See *Public Service Company of New Hampshire* (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 540 (1977).

[4] Hearings are not required at the operating license stage unless the license applicant or a person whose interest may be affected by the proceeding requests a hearing. In recent years, hearings have usually been requested.

[5] Promulgation of this final rule does not affect the Commission's earlier denial of a petition for rulemaking, PRM-51-4, submitted by Boston Edison Company, et al. See 45 FR 10492 (February 15, 1980). That petition would have excluded consideration of such matters as need for the plant, need for power, alternative sites, and alternative energy sources at the operating license stage. The denial of the petition was grounded largely on the petitioners' erroneous assumption concerning the scope of an operating license safety review. However, the Commission specifically noted in the denial that it was considering proposed rules on alternative site issues (the proposed rule under discussion here) and that as a result of the rulemaking might limit the scope of alternative site reviews in OL proceedings if as a practical matter there can be no significant new information as to alternative sites at the OL stage.

47 FR 12940
Published 3/26/82
Effective 4/26/82

10 CFR Part 51

Need for Power and Alternative Energy Issues in Operating License Proceedings

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Commission is amending its regulations in 10 CFR Part 51, "Licensing and Regulatory Policy and Procedures for Environmental Protection," to provide that, for National Environmental Policy Act (NEPA) purposes, need for power and alternative energy source issues will not be considered in operating license proceedings for nuclear power plants. In addition, these issues need not be addressed by operating license applicants in environmental reports to the NRC, nor by the staff in environmental impact statements (EIS), in operating license proceedings. The purpose of these amendments is to avoid unnecessary consideration of issues that are not likely to tilt the cost-benefit balance. This rule affects applicants for operating licenses for nuclear power plants.

EFFECTIVE DATE: April 26, 1982.

FOR FURTHER INFORMATION CONTACT: Darrel A. Nash, Office of State Programs, U.S. Nuclear Regulatory

Commission, Washington, D.C. 20555. Telephone: (301) 492-8882.

SUPPLEMENTARY INFORMATION:

Background of the Ruie

On August 3, 1981, the Commission published in the Federal Register (46 FR 39440) for public comment, proposed amendments to 10 CFR Part 51 of its regulations. As discussed in the statement of considerations which accompanied the proposed rule, the purpose of these amendments is to avoid unnecessary consideration of issues that are not likely to tilt the cost-benefit balance by effectively eliminating need for power and alternative energy source issues from consideration at the operating license stage. In accordance with the Commission's NEPA responsibilities, the need for power and alternative energy sources are resolved in the construction permit proceeding. The Commission stated its tentative conclusion that while there is no diminution of the importance of these issues at the construction permit stage, the situation is such that at the time of the operating license proceeding the plant would be needed to either meet increased energy needs or replace older less economical generating capacity and that no viable alternatives to the completed nuclear plant are likely to exist which could tip the NEPA cost-benefit balance against issuance of the operating license. Past experience has shown this to be the case. In addition, this conclusion is unlikely to change even if an alternative is shown to be marginally environmentally superior in comparison to operation of a nuclear facility because of the economic advantage which operation of nuclear power plants has over available fossil generating plants. An exception to the rule would be made if, in a particular case, special circumstances are shown in accordance with 10 CFR 2.758 of the Commission's regulations.

Comments were invited particularly on the following issues:

(1) Whether two articles, one by Amory and Hunter Lovins and the other by Amory Lovins, Hunter Lovins, and Leonard Ross, correctly state that a mixture of conservation and alternative sources would usually cost less than operating a nuclear plant, and therefore a newly completed nuclear plant should be written off; and

(2) Whether the rule, if adopted, should be applied to ongoing licensing proceedings.

Fifty-three letters of public comment were received on the proposed rule. Twenty-nine commenters supported the proposed rule change, and twenty-four were opposed. There were a few relatively minor modifications proposed for the promulgation of the final rule. The more significant comments and the Commission responses are given below.

Comments and Responses

Comment—Eight commenters, all of whom favored the rule change, expressed views on the articles by Lovins and Ross which state that conservation plus other energy forms usually result in lower cost than operation of a nuclear plant.[1] The comments were directed to various aspects of these articles which in the commenters views contain errors and omissions. Significant deficiencies mentioned were that the analysis is far from complete, it contains questionable costs figures, fails to discuss the rate at which conservation and alternative energy sources could be employed, fails to discuss the institutional measures that might be necessary to implement these changes, and fails to discuss the environmental consequences and societal costs of these actions. Some commenters stated that the approach in these articles would require coercion of utilities or final customers to achieve the energy use mix advocated. Mr. Amory Lovins was a commenter on the proposed rule and reiterated the conclusions stated in the two articles. He stated that the details of his argument had not been worked out, but that his engineering/economic analyses made him confident this finding would be supported.

Response—The Commission has evaluated these comments and further reviewed the two articles. The Commission does not necessarily agree with the varied comments on these articles. However, the Commission finds the articles lack sufficient analysis and documentation to support the arguments made. Moreover, the Commission is not aware of any other reliable and documented information which confirms that the Lovins-Ross conclusions are valid. On the other hand substantial information exists, such as that cited in the Supplementary Information of the proposed rule, which shows that nuclear plants are lower cost to operate than fossil plants.[2] If conservation lowers demand, then utility companies take the most expensive operating plants off-line first. Thus a completed nuclear plant would be used as a substitute for less economical generating capacity. Therefore, the Commission concludes that studies such as those cited in the proposed rule should be relied on to reach conclusions on comparative energy costs, rather than the Lovins-Ross articles.

Comments—Ten commenters addressed the issue of whether the rule change, if adopted, should apply to ongoing licensing proceedings then pending and to issues or contentions therein. Three commenters who opposed the rule commented that changing conditions since the CP should warrant not making the rule applicable to pending OL proceedings. The commenters who favor the proposed rule made comments which can be summarized as arguing that the reasons for eliminating the review at the OL stage were no less valid for ongoing cases than for future proceedings.

Response—The Commission believes that there is no compelling reason why pending operating license proceedings should be treated differently than future proceedings. Since need for power and alternative energy source issues were considered at the CP stage for all pending OL proceedings, in the absence of special circumstances, there is no more reason to believe that these issues would tip the NEPA cost-benefit balance against issuance of the operating license in pending cases than in future cases. Accordingly, the rule, when effective, will apply to pending operating license proceedings.

Comments—Three comments were made on the provision allowing need for power and alternative energy sources to be raised under 10 CFR 2.758. An example of how § 2.758 could be used to raise need for power and alternative energy source issues was given in the Supplementary Information to the proposed rule: "• • • special circumstances could exist if for example, it could be shown that nuclear plant operations would entail unexpected and significant adverse environmental impacts or that an environmentally and economically superior alternative existed." The commenters stated that the requirements for raising these issues under § 2.758 as written in the Supplementary Information should be modified because they believe the example would defeat the purpose of the rulemaking by making it as easy to require these issues to be treated as is the case under current rules.

Response—The Commission does not agree. Section 2.758(c) requires the petitioning party to make a prima facie showing that application of the regulation to a particular aspect of the proceeding would not serve the purposes for which the rule was

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[1] Amory and Hunter Lovins, *Energy/War: Breaking the Nuclear Link*, Friends of the Earth, 1980, pp. 48-49 and footnotes 109-111, and Amory B. Lovins, L. Hunter Lovins, and Leonard Ross, "Nuclear Power and Nuclear Bombs", Foreign Affairs 58-1137-77, (Summer, 1980).

[2] *See Steam-Electric Plant Construction Cost & Annual Production Expenses—1978*, December 1980, DOE/EIA-0033(78); *Draft Environmental Statement Relating to the Operation of Grand Gulf Nuclear Station Units 1 and 2*, NUREG-0777, May 1981, pp. 2-1 to 3-1; *Cost & Quality of Fuels for Electric Utility Plants*—December 1980, DOE/EIA-0075(80/12).

adopted. This is a much stricter standard then the current requirements for raising need for power and alternative energy sources in OL proceedings.

Comments—Four commenters noted that no mention was made of whether need for power and alternative energy sources needed to be addressed in NRC's operating license environmental impact statements (EIS's). The expressed concern was that silence on these issues may be interpreted to mean that they must still be treated in EIS's.

Response—The Commission does not intend that these issues be reexamined in every environmental impact statement prepared at the operating license stage. Accordingly, to avoid possible confusion, the final rule has a conforming change to generally exclude treatment of these issues in the EIS by modifying § 51.23. However, in very unusual cases, such as where it appears that an alternative exists that is clearly and substantially environmentally superior, the Commission would be obligated under NEPA to address these issues in its environmental impact statement. In such cases the Commission would address the issues in the environmental impact statement and would require the license applicant to address these issues in its environmental report as well. Accordingly, §§ 51.21 and 51.23 have been revised to make clear that while discussion of need for power and alternative energy source issues is generally not needed in environmental statements and reports at the operating license stage, discussion may be required by the Commission. The purpose of this change is to give the Commission the same latitude to consider environmental issues in special circumstances where no hearing is involved or before a hearing as it has under § 2.758 where a hearing is involved.

Comments—The Natural Resources Defense Council, Inc. (NRDC) stated that the proposed rule is legally impermissible under NEPA. NRDC's belief that the proposed rule is legally impermissible under NEPA is grounded on its assertion that the Commission's interpretation of *Calvert Cliffs Coordinating Committee, Inc., v. A.E.C.*, 449 F.2d 1109 (D.C. Cir. 1971) and *Union of Concerned Scientists v. A.E.C.*, 499 F.2d 1069 (D.C. Cir. 1974) in the Supplementary Information which accompanied the proposed rule is overly broad. In addition, NRDC asserts the rule does not comply with the Commission's duty under NEPA to consider alternatives at the operating license stage.

Response—The Commission disagrees and continues to believe that those cases support the proposition that NEPA does not require the Commission to duplicate at the operating license stage its review of alternatives absent new information or new developments. This is made clear in *Union of Concerned Scientists* wherein the Court explicitly stated "we expressly said in that opinion (referring to *Calvert Cliffs*) that full NEPA consideration 'need not be duplicated absent new information or new developments, at the operating license stage.' " [3] *UCS* at 1079. Alternative energy source issues receive and will continue to receive extensive consideration at the CP stage. However, judicial precedent makes clear that NEPA requires agency decisionmakers to only consider reasonable alternatives. *Friends of the Earth v. Coleman*, 513 F.2d 295 (9th Cir. 1975); *Natural Resources Defense Council v. Morton*, 458 F.2d 827 (D.C. Cir. 1972). Moreover, it is well settled that environmental issues need not be continually relitigated in individual adjudicatory proceedings, but may be resolved on a generic basis through rulemaking without violating NEPA. See *Ecology Action v. A.E.C.*, 492 F.2d 998, 1002 (2nd Cir. 1974), *Union of Concerned Scientists v. A.E.C.*, 499 F.2d 1069 (D.C. Cir. 1974) and *Natural Resources Defense Council v. N.R.C.*, 547 F.2d 633, 641 (D.C. Cir. 1976), *rev'd on other grounds and remanded sub nom. Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519 (1978). This rule, in the absence of a showing of special circumstances, resolves need for power and alternative energy source issues in OL proceedings on a generic basis. Accordingly, the Commission believes that the rule complies with the requirements in NEPA.

Comment—Four commenters noted that the proposed rule change did not mention the elimination of alternative site analysis at the OL stage, even though this has already been eliminated by rule change (46 FR 28630).

Response—The omission in the proposed rule of the language in 10 CFR 51.21 which eliminates the consideration of alternative sites at the OL stage has been reflected in the final rule. In addition, a reference to the elimination of consideration of alternative sites in environmental impact statements has been added to § 51.23(e). 10 CFR 51.53(b) which eliminates consideration of alternative sites at the OL hearing process is already a part of the Commission's rules.

[3] See also 40 CFR § 1508.28 of the NEPA regulations of the Council of Environmental Quality. That regulation encourages agencies to "tier" environmental impact statements when it "helps the lead agency to focus on the issues ripe for decision and *exclude from consideration issues already decided* * * *" (emphasis added). This comment was also made by one of the commenters.

Comments—Three commenters who favored the rule change stated that Atomic Safety and Licensing Boards may be able to initiate consideration of need for power and alternative energy sources, (*sua sponte*) even though parties to the proceeding may not.

Response—The Commission does not believe that it is necessary to prohibit licensing boards from bringing up issues on their own initiative, since 10 CFR 2.760a limits this action to serious safety, environmental or common defense and security matters.

Comments—Seventeen of the commenters who were opposed to the rule change stated generally that changed conditions between the time of the construction permit proceeding (CP) and the operating license proceeding (OL) such as increased costs, lower demand, new information, and new technologies warranted a consideration of these issues at the OL stage and a new determination made on need for power and alternative energy sources.

Response—While it is true that certain factors may change between the CP and the OL proceeding, the notice of proposed rulemaking sets forth why it is unlikely that these changes would tip the NEPA cost-benefit balance against issuance of the operating license. As more fully set forth in the notice, experience shows that completed nuclear power plants are used to their maximum availability and that there has never been a finding in a Commission OL proceeding that a viable environmentally superior alternative to operation of the nuclear facility exists. The Commission expects this to be true for the foreseeable future and hence, in the absence of a showing of special circumstances, consideration of these issues in individual OL proceedings is not necessary.

Regulatory Flexibility Statement

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not have a significant economic impact on a substantial number of small entities. The rule eliminates certain reporting requirements for owners of nuclear power plants licensed pursuant to sections 103 and 104b of the Atomic Energy Act, as amended, 42 U.S.C. 2133, 2134b. Owners of nuclear power plants are not within the definition of small business found in section 3 of the Small Business Act, 15 U.S.C. 632, or within the Small Business Size Standards set forth in 13 CFR Part 121.

Accordingly, the Commission is amending its regulations in 10 CFR Part 51 to provide that need for power and alternative energy source issues will no

be considered in operating license proceedings for nuclear power plants and need not be addressed by operating license applicants in environmental reports submitted to the NRC nor by the staff in environmental impact statements (EIS's), at the operating license stage. An exception to or waiver of the rule will be permitted in particular cases if special circumstances are shown in accordance with 10 CFR 2.758 of the Commission's regulations, "Consideration of Commission rules and regulations in adjudicatory proceedings." The rule will be applied to ongoing licensing proceedings then pending on its effective date and to issues or contentions therein.

Pursuant to the Atomic Energy Act of 1954, as amended, the National Environmental Policy Act, of 1969, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of Title 5 of the United States Code, notice is hereby given of the adoption of the following amendments to 10 CFR Part 51.

47 FR 57446
Published 12/27/82
Effective dates:
10 CFR 20.311 of Part 20 effective date is 12/27/83; 10 CFR Part 61 and all other changes effective 1/26/83.

Licensing Requirements for Land Disposal of Radioactive Waste

See Part 61 Statements of Consideration

➤ 49 FR 9352
Published 3/12/84
Effective: Upon approval of the information collection requirements by the OMB or 6/7/84.

10 CFR Parts 2, 30, 40, 50, 51, 61, 70, 72, and 110

Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions and Related Conforming Amendments

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is revising Part 51 of its regulations to implement section 102(2) of the National Environmental Policy Act of 1969, as amended (NEPA) in a manner which is consistent with the NRC's domestic licensing and related regulatory authority. Related conforming amendments are being made to Parts 2, 30, 40, 50, 61, 70, and 110. This rule reflects the Commission's policy to develop regulations to take account of the regulations of the Council on Environmental Quality (CEQ) implementing the procedural provisions of NEPA voluntarily, subject to certain conditions.

EFFECTIVE DATE: Upon approval of the information collection requirements by the Office of Management and Budget or June 7, 1984, whichever is later. NRC will announce the date of approval of information collection requirements by OMB in a future document.

FOR FURTHER INFORMATION CONTACT: Jane R. Mapes, Senior Regulations Attorney, Regulations Division, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: (301) 492–8695.

SUPPLEMENTARY INFORMATION: On March 3, 1980, the Nuclear Regulatory Commission published in the **Federal Register** (45 FR 13739–13766) a proposed revision of 10 CFR Part 51 and related conforming amendments to 10 CFR Parts 2, 30, 40, 50, 61, 70, and 110 of its regulations. Interested persons were invited to submit written comments and suggestions on the proposed amendments during the sixty day comment period which expired May 2, 1980. Comments were also solicited on several provisions of the CEQ regulations which the Commission had identified as requiring further study before implementing regulations could be prepared.

In addition to the preliminary views of the Council on Environmental Quality as set out in CEQ's letters of September 26, 1979 and October 29, 1979 which were published in Appendix B to the proposed rule, the Commission received twenty-one letters of comment, expressing the views of interested Federal agencies, state and local governments, industry, including electric utilities, vendors and architect-engineers, professional organizations and individual members of the public. The letters contained more than 100 individual comments and in some instances represented the views of several commenters. Comments were also received from interested members of the NRC staff.

As requested in the Commission's notice of proposed rulemaking, several commenters expressed views on the following sections of the CEQ regulations: 40 CFR 1502.14(b), 1502.22 (a) and (b) and 1508.18. A brief description of each of these provisions, accompained by a summary of the relevant comments and a statement of the Commission's present views on the issues raised, is set out below. The views of the commenters are fully set out in the individual letters of comment and in a subject matter compendium which has been placed with the letters in the Commission's Public Document Room at 1717 H Street, N.W., Washington, D.C. where they are available for inspection and copying. Since the topics addressed by §§ 1502.14(b) and 1502.22(a) of CEQ's regulations are interrelated, these sections will be discussed together.

By way of preface, the Commission restates its view that, as a matter of law, the NRC as an independent regulatory agency can be bound by CEQ's NEPA regulations only insofar as those regulations are procedural or ministerial in nature. NRC is not bound by those portions of CEQ's NEPA regulations which have a substantive impact on the way in which the Commission performs its regulatory functions.

Consideration of Alternatives

1. *40 CFR 1502.14(b).* This section provides that the environmental impact statement "[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits."

In addition to the Council on Environmental Quality, eleven commenters responded to the Commission's request for views on this provision of the CEQ regulations. Of these eleven commenters, four provided brief statements expressing general support for 40 CFR 1502.14(b). Seven commenters voiced the opinion that § 1502.14(b) does not accurately reflect the statutory mandate of NEPA with respect to the consideration of alternatives. Relying on judicial decisions handed down since the enactment of NEPA, these commenters stated that consideration of alternatives in an environmental impact statement is subject to a rule of reason, that neither the number of alternatives considered nor the amount of information furnished concerning each alternative need be exhaustive. According to the commenters, consideration need only be given to *reasonable alternatives* to the proposed federal action; the detail and amount of information furnished concerning the environmental consequences of each of those alternatives, including the proposed action, need only be sufficient to permit the decisionmaking agency to make a reasoned choice among those alternatives so far as environmental consequences are concerned. The commenters noted that the courts have recognized that Federal agencies have a

responsibility to reach meaningful decisions respecting environmental consequences if the objectives of NEPA are to be achieved. The commenters pointed out, however, that although the courts have taken a close look at the adequacy of the information on which those decisions are based, the courts have not required agencies, under the rule of reason, to supply or obtain more detailed information when the information needed for a meaningful decision is adequate.

2. *40 CFR 1502.22(a).* This section provides that "[i]f the information relevant to adverse impacts is essential to a reasoned choice among alternatives and is not known and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement."

Seven commenters, including the Council on Environmental Quality, submitted views on 40 CFR 1502.22(a). Two commenters expressed general agreement with the CEQ position that the standard set forth in 40 CFR 1502.22(a) merely restates existing NEPA law, is subject to a rule of reason, and therefore should be adopted by the Commission. One of these commenters also expressed concern that failure to obtain the requisite information as mandated by 40 CFR 1502.22(a) would preclude the Commission from carrying out its NEPA responsibilities to make a rigorous comparison of the proposed action with available alternatives.

Several commenters expressed the view that the standard imposed by 40 CFR 1502.22(a) should not be automatically applied in every case because it would place "a burden on the NRC in preparing an EIS that is not required by NEPA." These commenters noted that "NEPA cannot be read as a requirement that complete information concerning the environmental impact of a project must be obtained before action may be taken," and that this CEQ provision could have the practical effect of "requir[ing] that the EIS not be used as a decision-making document, *i.e.*, does not satisfy the mandate of NEPA, until all 'relevant' information is available so long as the costs of obtaining such information are not exhorbitant'."

One commenter emphasized the importance of care and restraint in determining when costly information is essential to a reasoned choice among alternatives. The commenter suggested that requests for data involving large costs should "be justified on the basis that the magnitude of the benefits to be derived from the information clearly exceed the costs associated with obtaining and analyzing this information • • •" and that requirements for data involving large costs "should be limited to matters that speak to the basic license ability [*sic* licensability] of the perferred site/plant combination."

Several commenters stated that NEPA does not require that all relevant information regarding the adverse impact of alternatives, including information which is not readily available because it is expensive or otherwise difficult to obtain, be known before a decision is reached. According to these commenters, NEPA merely requires that the decisionmaker be informed of any uncertain or unknown environmental effects. In each case, responsibility for evaluating the sufficiency of the information rests with the decisionmaker who must determine first, whether it is possible to make a reasoned decision on the basis of the information provided, and second, whether in the absence of adequate information, more information should be obtained or a decision should be made not to proceed with the proposed action. In the opinion of the commenters, strict application of the standard in 40 CFR 1502.22(a) would not only eliminate this element of flexibility in agency decisionmaking, it would also lengthen the time needed to complete NRC environmental reviews. The commenters expressed the view that application of the rule is unlikely to result in better decisionmaking and could have a severe and detrimental effect on the ability of the NRC, as an independent regulatory agency, to carry out its substantive licensing and related regulatory functions in a responsible and objective manner.

The primary mission of the Nuclear Regulatory Commission is to regulate civilian nuclear energy activities to ensure that they are conducted in a manner which will protect the public from the standpoint of radiological health and safety, maintain national security, comply with the antitrust laws and, since the passage of the National Environmental Policy Act of 1969, protect the environment. Charged with carrying out the licensing and related regulatory functions of the former Atomic Energy Commission,[1] the NRC has no authority to encourage and promote the development of atomic energy for peaceful purposes. Nor does it bear any responsibility for the development or regulation of other energy sources.

Within this framework, the possible actions which the Commission itself may take are limited. Their scope is determined in the first instance by the nature of the application or petition presented to the Commission for action. So far as Commission action is concerned, the available alternatives are to grant the application, grant the application subject to certain conditions, or deny the application, either with or without prejudice. Although the Commission has an obligation to determine the accuracy and relevance of the safety-related and environmental information presented and to perform the requisite safety and environmental analyses, the Commission has no power to compel an applicant to come forward or to require an applicant, once having come forward, to prepare and submit a totally different proposal, for example to construct and build a different type of nuclear power reactor pursuant to detailed specifications furnished by the Commission on a site identified by the Commission but not chosen by the applicant. As an independent regulatory agency, the NRC does not select sites or designs or participate with the applicant in selecting proposed sites or designs.

In preparing this revision of 10 CFR Part 51 in final form, the Commission has reviewed its regulatory experience under NEPA, both from the standpoint of the kinds of alternatives which are considered in making evironmentally sound regulatory decisions and the kinds and amounts of information needed to evaluate the comparative merits of those alternatives. In the usual case, these alternatives include the alternative of no action (denial of the application) and reasonable alternatives outside the jurisdiction of the NRC.

The types of alternative actions which the Commission itself is able to take reflect the Commission's functional role—the role of an independent regulatory agency authorized to perform quasi-judicial and quasi-legislative functions. The decisions which the Commission is required to make in carrying out its responsibilities as an independent regulatory agency play an equally important role in determining whether, from the standpoint of NEPA, all reasonable alternatives have received substantial treatment and whether the information submitted with respect to each alternative is sufficiently detailed. In developing these regulations, the Commission has tried to ensure that, at the respective points of decision, sufficient information will be available for meaningful consideration and comparison of a reasonable spectrum of alternatives, leading, in turn, to a reasoned decision. The Commission believes that the provisions of subpart A of Part 51 are consistent with the standard in 40 CFR 1502.14(b), that alternatives selected for detailed consideration be accorded substantial treatment. The Commission is also of the opinion that the way in which the NRC conducts its evironmental reviews implements this standard in a responsible and meaningful manner. This includes the practice of handling generic matters (for example, those

[1] The Atomic Energy Act of 1954, as amended, Pub. L. 83-703, as amended, 42 U.S.C. 2011 *et seq.*; the Energy Reorganization Act of 1974, as amended, Pub. L. 93-438, as amended, 88 Stat. 1233-1254, see especially 42 U.S.C. 5841 *et seq.*

which are common to all power reactor licensing proceedings and which may relate to environmental as well as safety issues) in generic rulemaking proceedings and generic environmental impact statements. Generic environmental issues which have received this kind of analysis and review need not be accorded the same kind of detailed consideration as that given to issues arising solely in the context of a specific licensing proceeding.

The Commission intends to follow the standard in 40 CFR 1502.22(a), though it notes that implementation of § 1502.22(a) may present substantive issues, specifically whether information which is not known is (a) relevant to adverse impacts, (b) essential to a reasoned choice among alternatives, and (c) obtainable at a cost which is not exorbitant. Based upon its past experience, the Commission believes that it will seldom, if ever, be called upon to determine whether the cost of obtaining unknown information deemed relevant to adverse impacts and essential to a reasoned choice among alternatives is or is not exorbitant. In the unlikely event that the issue is presented, the Commission reserves the right to resolve the matter in a manner which is consistent with the Commission's reponsibilities as an independent regulatory agency.

As illustrated in the following description of the manner in which NRC considers alternatives in connection with its environmental review of license applications for nuclear power plants, the amount of detailed information needed to make a reasoned decision on each of the many issues presented varies substantially among issues but is in each case commensurate with the nature of the issue addressed. With respect to most issues, with the possible exception of those relating to radiological matters, information need not be presented in the same degree of detail as that furnished in support of the applicant's proposal. In the review of alternative sites, for example, the Commission has found that reconnaissance-level information is adequate to assure that these alternatives are accorded substantial treatment.

Consideration of Alternatives in NRC Environmental Review and Analysis of License Applications for Nuclear Power Plants

In the customary NRC environmental review, detailed descriptions are prepared of the proposed plant, of the site on which the plant is proposed to be located, of the need for the plant, and of the environmental impacts likely to result from construction of the plant and from station operation. The following alternatives to the project are then addressed:

1. *Alternative energy sources and systems*, including alternatives which do not require new generating capacity and alternatives which do require new generating capacity. The former include such alternatives as power purchases, reactivation of retired plants, extension of the service life of existing plants and conservation measures. The latter include other alternative energy sources uniquely available to the applicant. In each case, consideration is given to the following types of energy sources: solar and wind, geothermal, petroleum liquids, natural gas, hydrodynamic, advanced nuclear, municipal solid wastes, biomass and coal. After the available alternative energy sources have been identified, they are categorized as competitive or non-competitive.

The amount and type of information needed to make a determination that a particular energy source is not available, or that a particular energy source, although available, is not competitive, is less extensive than that required to evaluate the comparative advantages and disadvantages from the standpoint of the environment between the proposed plant which is the subject of the license application and an alternative energy source which is both available and competitive. Once it is readily apparent that an alternative is non-competitive, either because of its technological status or lack of availability, the only data and information required with respect to that alternative is that needed to explain why the alternative is no longer being considered. Similarly, it is possible to reach a meaningful decision on the issues presented at subsequent levels of review (for example, classification of alternatives as environmentally preferable, environmentally equivalent, or environmentally inferior to the applicant's proposed plant, and comparison of the applicant's proposed plant with environmentally preferable or environmentally equivalent alternatives) without insisting that the amount and type of information presented respecting the alternative energy source be as extensive and detailed as that provided concerning the facility sought to be licensed.

2. *Alternative sites*. The Commission uses a two-stage decision standard to assure that adequate consideration has been given to alternative locations for constructing power generation facilities to meet the demonstrated need. The first part of this standard requires that the applicant submit a slate of alternative sites which are "among the best that could reasonably be found" inside a region in which it is reasonable to construct a plant to meet the projected need for power. The second part of the standard requires that the proposed site be approved only if no obviously superior alternative site has been identified.

The reason for considering alternative sites is that many environmental impacts can be avoided or significantly reduced through proper selection of the location for a new generating facility. These significant impacts which can be avoided or reduced are also readily detected at the planning stage of a power plant. For this reason alternative site reviews are encouraged as early as possible in the process of licensing a power plant and the use of reconnaissance-level information for making the comparative analyses is urged. The use of reconnaissance-level information to identify potentially significant environmental impacts has been extensively used and while it may not be possible to optimize design or make detailed impact predictions based on such information it is still sufficient to make decisions at the pre-design stage to determine which site should be chosen. It is highly unlikely that detailed examination of the site selected would reveal a significant environmental impact that had escaped the reconnaissance-level investigations. Based on its past experience, the Commission has found reconnaissance-level information adequate for informed environmental decisionmaking on alternative sites.

3. *Alternative plant systems*. These systems include alternative heat dissipation systems, alternative circulating water systems and alternative non-radioactive-waste-treatment systems.

Several levels of review, each requiring differing amounts and types of information, are used in evaluating alternatives to the heat dissipation systems and circulating water systems of the proposed plant. An initial screening is performed to eliminate alternative systems or system components which are obviously unsuitable for use at the proposed site, or are obviously incompatible with the types of systems expected to be used in the proposed plant. The remaining alternatives are screened again for the purpose of identifying those which are environmentally preferable, environmentally equivalent or environmentally inferior to the systems which the applicant is proposing to use in the proposed plant. The baseline systems against which the alternative systems are compared are those proposed by the applicant with any verified mitigation schemes to limit adverse impacts. The information needed to make this determination varies among alternatives and from case to case according to the type and

magnitude of the anticipated environmental impact. Only limited information, sufficient to justify the reasons given, is needed concerning alternatives which are rejected. Considerably more information is needed to compare the proposed systems with the environmentally preferable alternative.

4. *Alternative Transmission systems.* These alternatives include alternative transmission corridor routes, alternative system designs and alternative construction and maintenance practices.

The consideration given to these alternatives is similar to that given to the preceding types of alternatives. As in those cases, the amount and type of information needed concerning a particular alternative is highly variable depending for the most part on the nature and level of the environmental evaluation and review. Thus, far more detail is required to make a rigorous comparison between an environmentally preferable alternative and the applicant's proposal than is needed to determine which alternatives are environmentally preferable, environmentally inferior or environmentally equivalent to the applicant's proposal or to screen out alternatives which, for varying reasons, will not be considered.[2]

The courts have consistently held that the test of an agency's NEPA obligation to consider alternatives is subject to a rule of reason.[3] In overturning a holding of the Court of Appeals that rejection of an alternative, in this case energy conservation, on the basis of a threshold test was capricious and arbitrary, the United States Supreme Court stated:

> • • • The term "alternatives" is not self-defining. To make an impact statement something more than an exercise in frivolous boilerplate the concept of alternatives must be bounded by some notion of feasibility. As the Court of Appeals for the District of Columbia Circuit has itself recognized:
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> "There is reason for concluding that NEPA was not meant to require detailed discussion of the environmental effects of 'alternatives' put forward in comments when these effects cannot be readily ascertained and the alternatives are deemed only remote and speculative possibilities, in view of basic changes required in statutes and policies of other agencies—making them available, if at all, only after protracted debate and litigation not meaningfully compatible with the time-frame of the needs to which the underlying proposal is addressed." *Natural Resources Defense Council, v. Morton, 148 U.S. App. D.C. 5, 15–16,* 458 F. 2d 827, 837–838 (1972).

[2] The review of alternatives is limited to alternatives that are applicable to and compatible with the proposed plant, the applicant's service area and the regional transmission network, alternatives that are not prohibited by local, state or federal regulations, and alternatives that can be judged as practical from a technical standpoint with respect to the proposed dates of plant operation.

[3] *Natural Resources Defense Council, Inc. v. Morton,* 458 F. 2d 827 at 834, 837 (U.S. App. D.C. 1972).

See also *Life of the Land v. Brinegar,* 485 F. 2d 460 (CA9 1973), cert. denied, 416 U.S. 961 (1974). Common sense also teaches us that the "detailed statement of alternatives" cannot be found wanting simply because the agency failed to include every alternative device and thought conceivable by the mind of man. Time and resources are simply too limited to hold that an impact statement fails because the agency failed to ferret out every possible alternative, regardless of how uncommon or unknown that alternative may have been at the time the project was approved • • •.

Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519 at 551 (1978). Accord: *Seacoast Anti-Pollution League v. Nuclear Regulatory Commission,* 598 F. 2d 1221 at 1223 (1st Cir. 1979).

In *Sierra Club v. Morton,* 510 F. 2d 813 at 820 (5th Cir. 1975), the Court of Appeals stated:

> • • • The courts have approached their review of claims that congressionally specified detail of environmental effects was lacking in an EIS with a view that Congress did not intend to mandate perfection, or intend "for an impact statement to document every particle of knowledge that an agency might compile in considering the proposed action." (Footnotes omitted.)

In *Cody v. Morton,* 527 F. 2d 786 at 796 (1975), the Court of Appeals for the Ninth Circuit concluded that "the fact that the EIS concedes that certain environmental effects are not known • • • does not necessarily undermine the adequacy of the statement • • •" The court reasoned:

> Neither section 102(2) (B) or (C) [42 U.S.C. § 4332 (2) (B) or (C)] can be read as a requirement that complete information concerning the environmental impact of a project must be obtained before action may be taken. If we were to impose a requirement that an impact statement can never be prepared until all relevant environmental effects were known, it is doubtful that any project could ever be initiated. *Jicarilla Apache Tribe of Indians v. Morton,* 471 F. 2d 1275, 1280 (9th Cir. 1973).

With respect to the requisite level of detailed information,[4] the courts have held that the detail required "• • • is that necessary to establish that an agency in good faith objectivity has taken a sufficient look at the environmental consequences of a proposed action and at alternatives to that action."[5] Information has been considered sufficient if it permits a reasoned choice to be made among different courses of action and if it provides enough detail to enable those who did not have a part in compiling the information to understand and consider meaningfully the pertinent environmental influences involved.

The consideration to be given alternatives is discussed in the opinion of the Atomic Safety and Licensing Appeal Board in ALAB–631 (In the Matter of Portland General Electric Company, et al., Trojan Nuclear Plant, Docket No. 50–344, 9 NRC 263 (1979).)[6] In that case, which involved an amendment to an operating license for a facility for which a full NEPA review had already been conducted, the Appeal board affirmed the ruling of the Licensing Board that an environmental impact statement need not be prepared in connection with an amendment to the operating license for the Trojan nuclear facility which amendment would permit the expansion of the capacity of the facility's spent fuel storage pool by replacing the existing storage racks which provided space for 280 fuel assemblies with new storage racks which would provide space for 651 fuel assemblies. The conclusion of the Licensing Board was based on a finding that the environmental impacts associated with the expansion of the capacity of the spent fuel pool were local in character and insignificant in extent.[7] For this same reason, the Licensing Board also declined to consider alternatives to pool capacity expansion, reasoning that "• • • if the environmental effects of the proposed action are negligible, the impacts of any alternatives perforce must be equal or greater • • •" and citing "*Sierra Club* v. *Morton,* 510 F. 2d 813, 825 (5th Cir. 1975) for the proposition that alternatives which would occasion similar or greater harm need not be evaluted. 8 NRC at 454."[8]

The Appeal Board endorsed this view, stating:

> As we read it, the NEPA mandate that alternatives to the proposed licensing action be explored and evaluated does not come into play in such circumstances—in short, there is no obligation to search out possible alternatives to a course which itself will not either harm the environment or bring into serious question the manner in which this country's resources are being expended. 9 NRC 263 at 266.

The Appeal Board also concluded that

> • • • The staff and Licensing Board properly confined themselves to an identification and appraisal of those environmental effects directly attributable to the expansion of the capacity of the Trojan pool. Because pending or past licensing

[4] An agency's information-gathering obligations, like an agency's other NEPA obligations are necessarily bounded by a rule of reason. *State of Alaska v. Andrus,* 580 F.2d 465 at 472–473 (D.C. Cir. 1978).

[5] *Save Our Sycamores v. Metropolitan Atlanta, Etc.,* 576 F.2d 573 at 576 (5th Cir. 1978).

[6] In evaluating this decision of the Appeal Board, it is important to keep the factual context in which it was rendered clearly in mind. The action under consideration was an amendment to an operating license. Prior to issuance of the operating license, a full NEPA review, including consideration of alternatives, was conducted. NEPA does not require that the same ground be replowed.

[7] "[T]he evidence establishes without contradiction that the process of installing the new racks in that pool and the operation of the pool with its expanded capacity will neither (1) entail more than negligible environmental impacts; nor (2) involve the commitment of available resources respecting which there are unresolved conflicts • • • (footnotes omitted)" 9 NRC 263 at 266.

[8] 9 NRC 263 at 265.

actions affecting the capacity of other spent fuel pools could not either enlarge the magnitude or alter the nature of those effects there was thus no occasion to take into account any such actions in determining the license application at bar. 9 NRC 263 at 268.

As indicated in the preceding discussion, the Commission's general approach to the consideration of alternatives from the standpoint of NEPA is closely tailored to the nature and scope of the Commission's licensing and related regulatory functions, including the fact that the Commission's role in protecting the radiological health and safety of the public is a limited one, confined primarily to granting applications with or without conditions or denying applications, and does not include authority to undertake developmental programs. At the same time, the Commission and the NRC staff have made a concerted effort to make sure that this approach is implemented in such a way that the basic NEPA requirement that an agency in good faith objectivity take a hard look at the environmental consequences of a proposed action and at the alternatives to that action,[9] is fully satisfied. From the standpoint of the Commission's basic functions, the Commission is of the opinion that this approach, which has been followed in revised Part 51, is both best suited to achieving the objectives of NEPA and consistent with the provisions of NEPA as interpreted by the courts in light of the rule of reason.

Worst Case Analysis

3. *40 CFR 1502.22(b).* This section provides that "[i]f the information relevant to adverse impacts is essential to a reasoned choice among alternatives and is not known and the overall costs of obtaining it are exorbitant or (2) the information relevant to adverse impacts is important to the decision and the means to obtain it are not known (e.g., the means for obtaining it are beyond the state of the art) the agency shall weigh the need for the action against the risk and severity of possible adverse impacts were the action to proceed in the face of uncertainty. If the agency proceeds, it shall include a worst case analysis and an indication of the probability or improbability of its occurrence."

Section 1502.22(b) summarizes the environmental decisionmaking process and identifies the points at which agencies must make decisions when information is not known. Thus, each agency must decide for itself whether the information which is not known is relevant to adverse impacts and if relevant, whether the information is important to the decision. The agency must also decide whether it wishes to proceed with the action in the absence of needed information. Up to this point, the Commission has no difficulty with the provisions of § 1502.22(b). The problem lies in the final sentence which states that "[i]f the agency proceeds [with the action], it shall include a worst case analysis and an indication of the probability or improbability of its occurrence." By thus specifying what information the agency must consider in order to achieve the NEPA policy goal of minimizing adverse impacts and in order to make a reasoned decision among alternatives, § 1502.22(b) becomes, in essence, a substantive requirement rather than a procedural regulation. As stated earlier, it is the Commission's view that NRC is not bound by those portions of CEQ's NEPA regulations which have a substantive impact on the way in which the Commission performs its regulatory functions. As discussed in the following paragraphs, the Commission has articulated its interim policy regarding Nuclear Power Plant Accident Considerations under NEPA (45 FR 40101–40104, June 13, 1980).

The courts have held that the nature and form of environmental analysis required in any given case are matters left to the discretion of the agency involved. *Alaska* v. *Andrus*, 580 F.2d 465, 480 (D.C. Cir. 1978). This must be particularly true where determinations respecting the nature and form that environmental analysis involv consideration of complex technical questions particularly within the competence of the agency to evaluate. In these circumstances, the judgment of the NRC as the agency with the requisite technical expertise should govern.

Since December 1, 1971, when the former Atomic Energy Commission published a proposed Annex to Appendix D of 10 CFR Part 50 (36 FR 22851) containing certain standardized assumptions to be used by applicants in discussing accidents in environmental reports, both the AEC and the NRC, its successor agency, have been actively concerned with the problem of how the consequences of nuclear power plant accidents should be evaluated, both from the standpoint of safety and from the standpoint of their environmental impact. This continuing concern led to the publication of the Reactor Safety Study (WASH–1400) in draft form in August 1974 and final form in October 1975, followed by the publication in September 1978 of the "Risk Assessment Review Group Report to the U.S. Nuclear Regulatory Commission," NUREG/CR–0400. On January 18, 1979, the Commission issued a policy statement on the Reactor Safety Study in light of the Risk Assessment Review Group Report. In this policy statement, the Commission accepted the findings of the Review Group on the achievements and limitations of the Reactor Safety Study. The accident on March 28, 1979 at Three Mile Island, Unit 2, emphasized the need for a change of policy on how to analyze and evaluate the environmental consequences of accidents.

On June 13, 1980, the Commission responded to this need by publishing a Statement of Interim Policy (45 FR 40101–40104) containing guidance, to be effective immediately, on the treatment to be accorded nuclear power plant accidents in environmental impact statements prepared pursuant to section 102(2)(C) of NEPA. In issuing the interim guidance, the Commission noted that its "experience with past NEPA reviews of accidents [conducted in accordance with the set of standardized assumptions contained in the former proposed Annex to Appendix D of 10 CFR Part 50, now withdrawn] and the TMI accident clearly leads us to believe that a change is needed • • •." The Commission also stated that "• • • pending completion of rulemaking activities in the areas of emergency planning,[10] siting criteria, and design and operational safety [including rulemaking relating to degraded core cooling and core melt accidents] all of which involve considerations of serious accident potential, the Commission finds it essential to improve its procedures for describing and disclosing to the public the basis for arriving at conclusions regarding the environmental risks due to accidents at nuclear power plants • • •

It is the Commission's expectation that this guidance,[11] will remain in effect until such time as the Commission is able to continue the rulemaking proceeding initiated December 1, 1971, for the purpose of codifying the Commission's position on the treatment of accident risks under NEPA. Because of the number and importance of other safety-related matters which are relevant to accidents and their consequences and which must first be addressed in speparate rulemaking proceedings, it is the Commission's considered opinion that it would be premature at this time to attempt to codify the guidance and formally incorporate it into the Commission's regulations. As indicated in the

[9] *Natural Resources Defense Council, Inc.* v. *Morton*, 458 F. 2d 827 (U.S. App. D.C. 1972).

[10] On August 18, 1980, the Commission published a final rule, to be effective November 3, 1980, upgrading its emergency planning regulations (45 FR 55402–55413.)

[11] The Commission's prior position as set out in the former proposed Annex to Appendix D of 10 CFR Part 50 has consistently been upheld by the courts. See: *Carolina Environmental Study Group* v. *United States*, 510 F.2d 796 at 799 (1975); *Vermont Yankee Nuclear Power Corp.* v. *NRDC*, 435 U.S. 519 at 551 (1978); *Hodder* v. *NRC*, 13 ERC 1711 (1978), cert. denied, 13 ERC 1713 (1979).

guidance, the Commission expects the experience gained under the Statement of Interim Policy and the close study given to significant safety-related issues in connection with the Commission's on-going activities, including rulemaking, to make existing and future nuclear power plants safer, to play an important and formative rule in determining to scope and content of future NRC regulations dealing with the treatment of accident risks under NEPA.

As formulated in the Statement of Interim Policy, the Commission guidance on how accident considerations are to be handled in future NEPA reviews, states, in part, that—

> It is the position of the Commission that its Environmental Impact Statements, pursuant to * * * [NEPA] shall include a reasoned consideration of the environmental risks [impacts] attributable to accidents at the particular facility or facilities within the scope of each such statement. In the analysis and discussion of such risks, approximately equal attention shall be given to the probability of occurrence of releases and to the probability of occurrence of the environmental consequences of those releases. Releases refer to radiation and or radioactive materials entering environmental exposure pathways, including air, water, and ground water.
>
> Events or accident sequences that lead to releases shall include but not be limited to those that can reasonably be expected to occur. In-plant accident sequences that can lead to a spectrum of releases shall be discussed and shall include sequences that can result in inadequate cooling of reactor fuel and to melting of the reactor core. The extent to which events arising from causes external to the plant which are considered possible contributors to the risk associated with the particular plant shall also be discussed * * *.
>
> The environmental consequences of releases whose probability of occurrence has been estimated shall also be discussed in probabilistic terms. Such consequences shall be characterized in terms of potential radiological exposures to individuals, to population groups, and where applicable, to biota. Health and safety risks that may be associated with exposures to people shall be discussed in a manner that fairly reflects the current state of knowledge regarding such risks. Socioeconomic impacts that might be associated with emergency measures during or following an accident should also be discussed. The environmental risk of accidents should also be compared to and contrasted with radiological risks associated with normal and anticipated operational releases.
>
> In promulgating this interim guidance, the Commission is aware that there are and will likely remain for some time to come many uncertainties in the application of risk assessment methods, and it expects that its Environmental Impact Statements will identify major uncertainties in its probabilistic estimates. On the other hand the Commission believes that the state of the art is sufficiently advanced that a beginning should now be made in the use of these methodologies in the regulatory process, and that such use will represent a constructive and rational forward step in the discharge of its responsibilities.

Applied consistently, in accordance with its terms, the Commission's Statement of Interim Policy on Nuclear Power Plant Accident Considerations under NEPA can be expected to have a broad and pervasive impact. Under the provisions in 40 CFR 1502.22(b), an agency need only undertake the preparation of a worst case analysis, including an indication of the probability or improbability of its occurrence, when information relevant to adverse impacts is essential to a reasoned choice among alternatives is not known and cannot be obtained and the agency has decided to take the action despite the demonstrable absence of information. In these circumstances, which are limited to those in which the uncertainty of the requisite information base is recognized, the worst case analysis serves as a counterweight which the agency is required to place in the balance to assure that the need for the action which the agency is, in fact, planning to take is properly weighed against the risk and severity of possible adverse impacts. In accordance with the intent and the guidance contained in the Commission's Statement of Interim Policy, the NRC staff will initiate treatments of accident considerations in its ongoing NEPA reviews of nuclear power plants, i.e., for any proceeding at a licensing stage where a Final Environmental Impact Statement has not yet been issued. In addition, all Environmental Reports submitted by applicants for construction permits and for operating licenses on or after July 1, 1980, should also include a discussion of the environmental risks associated with accidents that follows this interim guidance.

Although the Commission's Statement of Interim Policy addresses accidents at nuclear power plants, the general principles and objectives enunciated in the Interim Statement and quoted in part in this preamble are readily applicable to and equally appropriate for other types of NRC licensing and regulatory actions for which the NRC staff has determined to prepare an environmental impact statement. (See § 51.20(b), which decribes types of actions, in addition to actions relating to nuclear power reactors, for which environmental impact statements will be prepared.) In considering the environmental risks attributable to accidents which might occur in connection with these types of NRC licensing and regulatory actions, the NRC staff will follow the principles in the Statement of Interim Policy as a matter of general guidance.

On March 25, 1980, the staff of the Council on Environmental Quality submitted a copy of the Environmental Law Institute's report entitled "NRC's Environmental Analysis of Nuclear Accidents: Is It Adequate?" dated February 4, 1980, and a copy of a letter dated March 20, 1980, from CEQ Chairman Gus Speth to NRC Chairman John Ahearne for NRC consideration as a Council comment on the Commission's proposed revision of 10 CFR Part 51 as published in the **Federal Register** on March 3, 1980. Both the letter and the report were highly critical of NRC's past practices with respect to the environmental analysis of possible nuclear accidents under NEPA. The CEQ letter characterized NRC treatment of potential accidents and their environmental impacts in environmental impact statements as "* * * largely perfunctory, remarkably standardized, and uninformative to the public * * *" despite "the broad diversity of size, design, and location of the nuclear reactors licensed by the Commission over the years, * * *." Noting that the typical NRC environmental impact statement "does not consider or analyze the possibility of a major accident even though it is these 'Class 9' accidents which have the potential for greatest environmental harm and which have led to the greatest public concern * * *." CEQ identified the policy contained in the proposed Annex to Appendix D of 10 CFR Part 50 as published for comment in December 1971 as the culprit primarily responsible for the problem.

In its Statement of Interim Policy, the Commission has formally withdrawn the proposed Annex to Appendix D of 10 CFR Part 50 and stated that as of June 13, 1980, the effective date of the Statement of Policy, the Annex shall not be used by applicants or by the NRC staff. The reasons given for the withdrawal, which reflect many of the concerns voiced by CEQ, are:

1. The Annex proscribes consideration of the kinds of accidents (Class 9) that, according to the Reactor Safety Study, dominate the accident risk.
2. The definition of Class 9 accidents in the Annex is not sufficiently precise to warrant its further use in Commission policy, rules, and regulations, nor as a decision criterion in agency practice.
3. The Annex's prescription of assumptions to be used in the analysis of the environmental consequences of accidents does not contribute to objective consideration.
4. The Annex does not give adequate consideration to the detailed treatment of measures taken to prevent and to mitigate the consequences of accidents in the safety review of each application.

In order to make doubly clear that Class 9 accidents would now be considered in environmental impact statements, the Commission stated:

> * * * Environmental Impact Statements shall include considerations of the site-specific environmental impacts attributable to accident sequences that lead to releases of radiation and/or radioactive materials.

including sequences that can result in inadequate cooling of reactor fuel and to melting of the reactor core [Class 9 accidents]. In this regard, attention shall be given both to the probability of occurrence of such releases and to the environmental consequences of such releases * * *

The Commission also indicated that under the new interm policy, the treatment of accident considerations "will take into account significant site- and plant-specific features, [and] will result in more detailed discussions of accident risks than in previous environmental statements, particularly for those related to conventional light water plants at land-based sites."

In its letter of March 20, 1980, CEQ stated:

We also encourage the Commission to consider preparing supplemental accident analyses for plants currently licensed for operation, particularly for those located near high population centers and those with unique features suggesting higher risk * * *

The following excerpts from the Commission's Statement of Interim Policy are relevant to this concern:

It is the intent of the Commission in issuing this Statement of Interim Policy that the staff will initiate treatments of accident considerations, in accordance with the foregoing guidance, in its ongoing NEPA reviews, i.e., for any proceeding at a licensing stage where a Final Environmental Impact Statement has not yet been issued * * * it is also the intent of the Commission that the staff take steps to identify additional cases that might warrant early consideration of either additional features or other actions which would prevent or mitigate the consequences of serious accidents. Cases for such consideration are those for which a Final Environmental Statement has already been issued at the Construction Permit stage but for which the Operating License review stage has not yet been reached. In carrying out this directive, the staff should consider relevant site features, including population density, associated with accident risk in comparison to such features at presently operating plants. Staff should also consider the likelihood that substantive changes in plant design features which may compensate further for adverse site features may be more easily incorporated in plants when construction has not yet progressed very far.

In addition to CEQ, eight other commenters expressed views on the provisions of 40 CFR 1502.22(b) relating to worst case analysis. Three commenters, the States of Georgia and Illinois and the County of Suffolk, New York, expressed broad support for the CEQ position. As the previous discussion illustrates, the Commission, in its Statement of Interim Policy on Nuclear Power Plant Accident Considerations, has responded affirmatively to these concerns.

Five commenters, relying on existing case law holding that an environmental impact statement need not discuss remote and highly speculative consequences or events whose occurrence is extremely improbable, and that the consideration to be given to environmental risks incident to reasonable alternative courses of action is subject to a rule of reason, expressed the view that the provisions of the CEQ regulations relating to worst case analysis (40 CFR 1502.22(b)) are not mandated by the statutory provisions of the National Environmental Policy Act of 1969, as amended. One of these commenters expressed the view that the "* * * future treatment of Class 9 accidents in environmental impact statements is a complicated question that, in our opinion, requires more detailed consideration than is possible in the present notice-and-comment rulemaking." The Commission's action of June 13, 1980 promulgating policy guidance on the treatment to be accorded accidents in environmental impact statements and inviting comments thereon responds directly to this concern.

Major Federal Action

4. *40 CFR 1508.18.* This section defines "Major Federal action" to include, *inter alia*, "the circumstance where the responsible officials fail to act and that failure to act is reviewable by courts or administrative tribunals under the Administrative Procedure Act or other applicable law as agency action." In inviting comments and suggestions on this section, the Commission specifically noted that § 1508.18 does not appear to address the question whether an environmental assessment or environmental impact statement is required when the Commission denies a petition for rulemaking under 10 CFR 2.802.

Six commenters expressed views on § 1508.18, two supporting and one opposing the definition, with the remainder offering general comments of an explanatory nature. In its preliminary comments, CEQ encouraged the Commission to adhere to the definition of "major federal action" set forth in § 1508.18, noting that in some cases, a denial of a petition for rulemaking involves consideration of certain generic issues which warrant NEPA review.

Although § 1508.18 classifies reviewable failures to act as actions, § 1508.18 does not classify every action of this type as a major Federal action requiring preparation of an environmental impact statement. Similarly, although denials of petitions for rulemaking fall within this broad class of Federal actions, not all denials of rulemaking petitions are major Federal actions for which an environmental impact statement must be prepared. Since it is not possible to forecast with any degree of certainty the entire range of situations in which environmental review would be appropriate, the Commission has decided, after careful review of the pertinent statutes and case law, that with respect to denials of petitions for rulemaking, the Commission accepts the CEQ definition, and thus does not categorically exclude denials of petitions for rulemaking from environmental review.

In reaching this conclusion, the Commission recognized that there may, in fact, be situations, such as those presented by petitions which address substantive matters on which the Commission does not have an existing policy, where the denial of a petition for rulemaking constitutes a major Federal action warranting scrutiny under NEPA. In such cases, which are expected to be few in number, the Commission fully intends to undertake the requisite environmental analysis to determine whether to prepare an environmental impact statement. On the other hand, it appears that there are certain situations where the action of the Commission in denying a petition for rulemaking need not be subject to environmental review. Where, for instance, the action of the agency in denying the petition is not reviewable in either an administrative or judicial tribunal, 40 CFR 1508.18 clearly excludes such action from the definition of "major federal action." Likewise, where the petition relates to a section of the regulations categorically excluded from NEPA analysis (see § 51.22(c) (1), (2) and (3)), the action of the agency in denying such a petition need not be subjected to scrutiny under NEPA. And finally, where the petition raises an issue or issues considered and resolved by the Commission in some earlier action, the Commission need not retrace its earlier steps and prepare another environmental impact statement or environmental assessment prior to denying the petition. In this later situation, the Commission, in denying such a petition for rulemaking, is merely reaffirming its previous policy decision. Accordingly, there is no requirement that an environmental impact statement or environmental assessment be prepared. These examples—the list is by no means exhaustive—illustrate some of the situations where the action of the Commission in denying a petition for rulemaking does not fall within the ambit of NEPA.

Response to Comments on and Changes to Specific Provisions of the Proposed Rule

Although the basic structure of revised Part 51 is essentially the same as that of the proposed rule, some provisions of the proposed rule have been revised. In addition, certain minor editorial and clarifying changes have been made. The principal differences

between the proposed revision of Part 51 as published for comment on March 3, 1980 and the text of Part 51 as adopted and promulgated by the Commission in final form are identified and discussed below in the order in which they appear in the regulation.

Several commenters noted that the proposed regulations failed to specify how the Commission's responsibilities under other environmental laws, such as, for example, the National Historic Preservation Act of 1966, the Wild and Scenic Rivers Act, the Endangered Species Act of 1973 and the Coastal Zone Management Act of 1972, would be accommodated. As explained in the preamble to the proposed rule, new subparts will be added to Part 51 as necessary to incorporate any additional regulations which may be required to implement provisions of other environmental laws. To the extent practicable, the Commission intends that its responsibilities under other environmental laws be coordinated with its NEPA procedures.

Section 51.10 Purpose and scope of subpart; Application of regulations of Council on Environmental Quality.

The first paragraph of § 51.10(b) of the proposed rule which identified certain provisions of the CEQ regulations to which the Commission intended to devote further study has been revised. The revision affirmatively recognizes the Commission's continuing obligation to conduct its domestic licensing and related regulatory functions in a manner which is both receptive to environmental concerns and consistent with the Commission's responsibility as an independent regulatory agency for protecting the radiological health and safety of the public. No change has been made in those provisions of § 51.10(b) which reserve the Commission's right to act independently (see § 51.10(b) (1), (2) and (3) which relate respectively to the examination of future interpretations or changes in the CEQ regulations, the preparation of independent environmental impact statements and the right to make final decisions.)

Three commenters suggested that the proposed rule be revised to provide more specific guidance on the limitations imposed on NRC's environmental review authority by section 511(c)(2) of the Federal Water Pollution Control Act. Several sections have been added to revised Part 51 to clarify NRC's licensing and NEPA responsibilities with respect to water quality.

The Commission has amended § 51.10(c) to reflect the conclusion of the Atomic Safety and Licensing Appeal Board [12] that Federal responsibility for regulating nonradiological pollutant discharges into aquatic bodies rests with the Environmental Protection Agency.

Consistent with the Appeal Board decisions, the Commission has also amended § 51.22(c) to exclude from the NEPA process as a categorical exclusion amendments to permits and licenses deleting from those permits and licenses any limiting conditions of operation or monitoring requirements based on or applicable to any matter subject to the provisions of the Federal Water Pollution Control Act (Category 17). The NRC will rely on agencies with authority under the Federal Water Pollution Control Act to determine the need for and, accordingly, to impose requirements for any mitigative actions necessary to protect the aquatic segment of the environment from the impacts of nonradiological pollutant discharges resulting from station construction and operation. Further, NRC will rely on those agencies to prescribe monitoring as necessary to document actual effects of station operation.

One caveat deserves mention. The Commission does not intend these revisions to 10 CFR Part 51 to be interpreted to mean that NRC no longer has any operational responsibility with respect to the aquatic environment. In connection with its independent responsibilities under other statutes, the NRC may indeed be required to consider matters relating to the aquatic environment. Under the provisions of the Endangered Species Act of 1973, for example, the NRC is obliged to consider listed species and endangered habitats, many of which are associated with the aquatic environment.

The Commission is not unmindful of the fact that under certain provisions of the Federal Water Pollution Control Act, such as sections 401(a)(2) and 401(d), NRC licenses, like licenses issued by other Federal agencies, are subject to conditions deemed imposed by the Federal Water Pollution Control Act as a matter of law. In order to accord explicit recognition to these statutory requirements and at the same time to obviate the need to undertake a series of time-consuming actions to amend specific licenses to incorporate conditions imposed by statute which may be subject to frequent change by certifying States, the Commission is amending § 50.54 of its regulations to make clear that NRC licenses issued under 10 CFR Part 50 are subject to all conditions deemed imposed by the Federal Water Pollution Control Act as a matter of law, whether or not those conditions are stated in the license.

Although the Commission is precluded from including in facility permits and licenses any conditions of its own relating to nonradiological discharges of pollutants to receiving waters, it does have an independent responsibility under NEPA to factor all significant impacts into its overall cost-benefit balance and to consider alternatives to the proposed action which are available for reducing adverse effects. These impacts include any degradation of water quality which may exist even

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[12] *Tennessee Valley Authority* (Yellow Creek Nuclear Plant, Units 1 and 2) ALAB-515, 8 NRC 702, December 27, 1978; *Carolina Power and Light Company* (H. B. Robinson, Unit No. 2) ALAB-569, 10 NRC 557, October 31, 1979.

" " " Suffice it to recall that in *Yellow Creek*, after an exhaustive analysis of the Water Act's legislative history (8 NRC at 708–12), we explained that it provided the following lessons (*id.* at 712–13):

"The first is that the spread of Federal responsibility for water quality standards and pollution control among the various licensing agencies, which resulted from the reading given NEPA by the *Calvert Cliffs* court, has been curtailed. That responsibility is shifted to EPA as its exclusive province. The second is that the mandate to acquire 'expertise' in developing, setting, and enforcing effluent limitations and water quality standards is also given to EPA; federal licensing agencies are to rely on that agency when such matters are involved and not develop duplicate expertise on their own. Third, those agencies are not to 'second-guess' EPA by undertaking independent analyses and setting their own standards in this area. And, finally, given the pointed Congressional comments cited, NRC, as statutory successor to the AEC, is unmistakably bound by those strictures.

"To be sure, in deciding whether to license specific projects, each agency must continue to weigh any resulting degradation of water quality in its NEPA cost-benefit balance. Section 511(c)(2) does not change this obligation. Rather, its intendment is to limit those agencies' NEPA roles to that balancing, leaving the substantive regulation of water pollution in EPA's hands."

On the basis of this analysis, we held squarely "that NRC may not undercut EPA by undertaking its own analyses and reaching its own conclusions on water quality issues already decided by EPA." 8 NRC at 715 " " ".

" " " events teach that the staff and Boards can best expend their limited resources by concentrating on those questions which only this Commission can handle, rather than by duplicating the efforts of a sister agency in a field peculiarly within that agency's competence. This is fully consistent with statutory mandates, for Congress stressed in the amended Water Act that it was to be implemented in a way that would avoid "needless duplication." [14]

[14] 33 U.S.C. 1251(f), which reads as follows: It is the national policy that to the maximum extent possible the procedures utilized for implementing this Act shall encourage the drastic minimization of paperwork and interagency decision procedures, and the best use of available manpower and funds so as to prevent needless duplication and unnecessary delays at all levels of government.

In sum, Congress has designated EPA the Federal guardian of the quality of the nation's waters. That agency's decisions may turn out to be wrong in particular cases. But the remedy—as the Licensing Board properly appreciated—is not for us to substitute our judgment for EPA's. We are bound to take EPA's considered decisions at face value, and simply to factor them into our cost-benefit balance. The Board below acted correctly in doing so. ALAB-569, 10 NRC 557 at 560–562.

In ALAB-515 (8 NRC 702 at 714), the Appeal Board stated that "we read that interagency agreement [the NRC–EPA Second Memorandum of Understanding] as adopting the position we do here." The Board also stated: "We think the NRC Policy Statement means exactly what it says, in committing this agency [NRC] not to impose different monitoring requirements where EPA has acted. That reading is consistent with the legislative history of the Water Act; to allow inconsistnet requirements would not be."

though water quality permits and certifications issued pursuant to the FWPCA have been fully complied with. In making that balance, as discussed in two NRC decisions,[13] the NRC may accept and use without independent inquiry the determinations made by EPA or the permitting authority concerning the magnitude of the aquatic environmental impacts. In order to satisfy its NEPA obligations and complete the overall cost-benefit balance in those instances where no assessment of aquatic impacts is available, the NRC must determine the magnitude of the potential aquatic impacts. The NRC may either do this on its own or in conjunction with the permitting authority and other agencies having relevant expertise. The NRC recognizes, however, that in carrying out these NEPA responsibilities, it has no authority to rely on limitations or monitoring requirements which are different from those imposed by EPA or the permitting authority pursuant to the Federal Water Pollution Control Act.

The Commission views its responsibilities under NEPA as including the responsibility for keeping informed of the environmental effects of its licensing actions. For effects involving degradation of the aquatic environment, the reporting requirements of NPDES permits issued pursuant to the Federal Water Pollution Control Act will be generally relied upon to alert the NRC to potential problems. In addition, the Commission will continue its practice of including conditions in its licenses to assure that it is kept knowledgeable about other environmental matters involving its licensees. This practice is consistent with the CEQ regulations which obligate agencies to adopt monitoring and enforcement programs where appropriate (40 CFR 1505.2(c)). The CEQ regulations also provide that the lead agency shall "* * * include appropriate conditions in grants, permits or other approvals" (40 CFR 1505.3(a)), and provide mitigation and monitoring information to cooperating agencies and the public upon request (40 CFR 1505.3 (c) and (d)).

"In the opinion of the Commission, this well-established practice should be appropriately reflected in the regulations. Accordingly, the Commission is amending Part 50 of this chapter to add a new § 50.36b which provides that each operating license for a utilization or production facility may include environmental conditions. These environmental conditions may include procedures for reporting and keeping records of environmental data, and conditions and monitoring requirements for the protection of the non-aquatic environment. They will be drafted in a manner which recognizes that the regulation of nonradiological pollutant discharges to aquatic bodies lies with the appropriate NPDES permitting agency. Environmental conditions will be derived from information contained in the applicant's environmental report as analyzed and evaluated in the NRC record of decision. The Commission may also include additional environmental conditions as appropriate. A conforming amendment has been made to § 51.50.

Section 51.10(d), which relates to enforcement actions, has been revised to make clear that section 102(2) of NEPA does not apply to denials of requests for action submitted pursuant to 10 CFR 2.206. (See 40 CFR 1508.18(a).)

Section 51.12 Application of subpart to ongoing environmental work.

Several commenters requested additional guidance on the extent to which the revised regulations would apply to ongoing environmental work, and identified certain ambiguities in the text of § 51.12 of the proposed regulations. In order to avoid undue delays in the review of applications for construction permits and operating licenses for nuclear power plants, one commenter suggested that the revised regulations not be made applicable to environmental reports completed within 180 days after the effective date of the revised regulations or to environmental impact statements completed within 90 days after that effective date. Although the Commission has decided not to adopt this particular suggestion, it recognizes that practical problems are likely to arise while the new regulations are being phased in and the necessary adjustments are being made in the conduct of NRC's environmental activities to accommodate the new procedures. Sections 51.12 (a) and (b) have been revised to reflect these concerns.

In adopting revised Part 51 in final form, the Commission directed that the revised regulations not go into effect until the information collection requirements have been approved by the Office of Management and Budget (OMB) or 75 days after the date of publication in the **Federal Register**, whichever is later. This grace period should enable applicants, the NRC staff and any other interested persons, to make a more orderly transition from the old to the new procedures. A new § 51.17 has beeen added and reserved for OMB approval.

Consistent with the intent of the CEQ regulations, the Commission does not intend revised Part 51 to be applied to ongoing environmental activities in a manner which will require completed environmental work or completed portions of environmental work to be redone solely by reason of the adoption and promulgation of these revised procedures. Instead, the Commission expects the revised regulations to be applied to ongoing environmental work to the extent practicable and in accordance with a rule of reason. The extent to which the provisions of the revised regulations are applicable to environmental work in progress will depend in each case on how far and how satisfactorily that work has progressed. For example, if work on a draft or final environmental impact statement is nearing completion on the date the revised regulations become effective, the Commission would not expect the staff to initiate a scoping process. On the other hand, the Commission wold not dissuade the staff from initiating a scoping process, even though the time established in the revised reguations for the initiation of scoping had passed, if the ongoing environmental work was at a stage where scoping might still be useful.

At the present time, the Commission has pending before it a number of applications for licenses to operate nuclear power reactors which are in various stages of environmental and safety review. In each case, the draft environmental impact statement for the construction permit for the facility was filed with the Environmental Protection Agency prior to July 30, 1979, the effective date of the CEQ regulations. In the majority of these cases, however, the draft environmental impact statement for the operating license has either not been filed or was filed on or after that date. The Commission does not intend revised Part 51 to be applied in such a way that environmental work relating to the issuance of operating licenses for these facilities will be considered to be exempt from the provisions of revised Part 51 simply because the draft environmental impact statements on the construction permits for these facilities were filed with EPA prior to the effective date of the CEQ regulations.

In accordance with § 51.12(b) of the revised regulations, the new procedures will be fully applicable to all environmental reports filed by applicants on or after the effective date of revised Part 51, and to all environmental work undertaken by the NRC staff following a determination by the staff pursuant to § 51.25 to prepare an environmental impact statement or an environmental assessment, if the determination was made on or after the effective date of revised Part 51.

The Commission's primary concern, under both the old and the revised versions of Part 51, is to satisfy its NEPA

[13] *Public Service Company of New Hampshire* (Seabrook Station, Units 1 and 2), ALAB-366, 5 NRC 39, 48-58 (1977), affirmed CLI-77-8, 5 NRC 503, 508-09 (1977); *see also* CLI-78-1, 7 NRC 1, 24-28 (1978); *Carolina Power & Light Co.* (H. B. Robinson, Unit No. 2), ALAB-569, 10 NRC 557, 560-563 (1979).

obligations in an environmentally responsible manner. To this end, § 51.41 of revised Part 51, like § 51.5(c)(3) of the Commission's former regulations, authorizes the Commission to require applicants to furnish additional environmental information whenever such information may be needed. One cannot automatically conclude that because an environmental report has been filed or an environmental assessment or environmental impact statement has been completed, that no more environmental data or analysis will be required. Irrespective of the procedures which may or may not have been followed, completed environmental reports, assessments or impact statements which may have been found to be deficient will, of necessity, have to be supplemented or redone. By the same token, it should not be necessary to redo environmental reports, assessments, impact statements or other environmental work of high quality solely because of the adoption of these revised procedures.

Section 51.13 Emergencies.

Section 51.13 has been revised to make clear that in taking actions subject to this section the Commission will consult with the Council on Environmental Quality about appropriate alternative NEPA arrangements as soon as feasible. Insofar as practicable, the Commission will endeavor to consult with the Council on Environmental Quality before taking the action. Since § 51.13 applies to emergency circumstances in which the need for prompt action may make prior consultation impractical, it is the Commission's intent that the provision requiring that "the Commission will consult with the Council as soon as feasible" be understood to include consultation with CEQ which occurs after the Commission has taken the emergency action. The emergency circumstances to which § 51.13 applies include situations in which the hazards of radiation are likely to become more severe unless immediate mitigative or remedial actions are taken.

Section 51.15 Time schedules.

Section 51.15 has been revised to reflect more accurately the respective responsibilities of the NRC staff, the licensing and appeal boards and the Commission for the conduct of licensing proceedings. The revision is consistent with the views expressed by the Atomic Safety and Licensing Appeal Board in ALAB-489, *In the Matter of Offshore Power Systems* (Floating Nuclear Power Plants) 8 NRC 194 at 201–208 (1978) that, absent Commission direction to the contrary, the licensing boards do not have the authority to control the NRC Staff's independent NEPA review or to dictate the schedule for completion of that review.[14]

Section 51.16 Proprietary information.

A new § 51.16 has been added to make clear that any proprietary information, whether submitted by applicants, petitioners for rulemaking, commenters, or other persons subject to the provisions of subpart A of revised Part 51, will be handled in accordance with established Commission procedures as specified in 10 CFR 2.790. Although the Commission believes that it will seldom be necessary to consider proprietary information in the review and evaluation of environmental matters, § 51.16 has been added so that the requisite procedures will be in place should the need arise.

Sections 51.20 and 51.21 Criteria for and identification of licensing and regulatory actions requiring environmental impact statements and environmental assessments.

Several commenters took issue with the types of actions identified by the Commission as requiring either environmental impact statements or environmental assessments. One major concern was that actions which were perceived as having a significant environmental impact might not be accorded adequate environmental review. Another concern was that the reference in § 51.20(a)(2) to the Commission's discretionary authority to prepare environmental impact statements was ambiguous and unnecessary. The Commission has given careful consideration to these comments and has looked closely at §§ 51.20 and 51.21 to determine what, if any, changes might be made to alleviate these concerns.

At the outset, the Commission wishes to make clear that it fully accepts its responsibilities under NEPA for the preparation and issuance of environmental impact statements on all major Commission actions which significantly affect the quality of the human environment. The Commission also recognizes that it has a continuing obligation to conduct its licensing and related regulatory functions in an environmentally responsible manner. In preparing these revised regulations, the Commission has tried to structure its NEPA process to assure that these responsibilities will be effectively carried out.

Within the broad spectrum of Commission actions subject to subpart A of revised Part 51, only those types of actions which have been determined by rule to be categorical exclusions are excluded from the NEPA process. The remaining types of actions are subject to NEPA review, requiring either an enviornmental impact statement or an environmental assessment leading in turn to a finding of no significant impact or to a decision to prepare an enviornmental impact statement. Under this scheme, an environmental assessment need not be made if the Commission has already decided to prepare an environmental impact statement. This two-step process (preparation of an environmental assessment followed by preparation of an environmental impact statement) need only be followed when it is unclear at the outset whether preparation of an environmental impact statement for the action in question is justified.

This general scheme is reflected in §§ 51.20, 51.21 and 51.22 of the Commission's regulations which specify the criteria for determining which types of actions require environmental impact statements, or environmental assessments, or which qualify as categorical exclusions. Section 51.21, which relates to environmental assessments, provides that environmental assessments are to be prepared for all licensing and regulatory actions except those covered by categorical exclusions or those for which environmental impact statements are being written.

Section 51.20(a) of the Commission's regulations provides that an environmental impact statement will be prepared whenever a proposed Commission action is determined to be a major Federal action significantly

[14] ALAB-489, the Appeal Board was asked to consider the question "(1) may the Board fix a deadline by which the staff must prepare and file its environmental impact statement?" The Appeal Board answered this question with "a qualified yes: The Licensing Board may direct the staff to publish its environmental documents by specific dates if, after affording the parties—including the staff—opportunity to be heard on the matter, it finds that no further delay is justified. In the present case, however, the decision to fix a firm date for filing the documents demanded does not rest on any such finding." (8 NRC 194 at 208.) The Appeal Board explained these qualifications more fully in the following excerpt from the opinion:

"One thing the Board may do is ascertain why the staff document in question has not been forthcoming. Certainly if it is to conduct the hearing in accordance with responsibilities assigned to it, the Board must at a minimum be entitled to look behind the staff's explanation for delay in submitting the environmental statement. If the staff can provide adequate assurance that it is acting as quickly and reasonably as the circumstances permit—and we emphasize the word *reasonably*—then the Board can ask no more and should reschedule the filing date accordingly.

"Where the Board finds, however, that the staff cannot demonstrate a reasonable cause for its delay, the Board may issue a ruling (with appropriate findings supported by the record) noting the staff's unjustified failure to meet a publication schedule. It may then either proceed to hear other matters or, if there be none, suspend the proceeding until the staff files the necessary documents. In either situation the Board, on its own motion or on that of one of the parties, may refer the ruling to us. See 10 CFR 2.730(f). We would hear such referrals expeditiously; and, were we to agree with the Board, we would certify the matter to the Commission. Its authority to rectify the situation is undoubted." (8 NRC 194 at 207, footnotes omitted.)

affecting the quality of human environment. Section 51.20(a) and (b)(13) also provides that the Commission may prepare an environmental impact statement in connection with other types of proposed actions (e.g., actions normally eligible for categorical exclusion or actions for which a finding of no significant impact would normally be prepared), when the Commission determines, in the exercise of its discretion, that it is advisable to do so. It is not possible to predict how often or under what circumstances the Commission might wish to exercise this discretion. However, there are likely to be at least a few occasions on which actions, which in normal circumstances might qualify for a categorical exclusion or only result in a finding of no significant impact following the completion of an environmental assessment, would, because of unique, unusual or controversial circumstances, require extensive environmental review. In order to make clear that its NEPA responsibilities will be fully honored in connection with these actions, the Commission has retained § 51.20(a)(2) in the text of the regulations. Complementary provisions have been included in §§ 51.21 and 51.22(b).

Section 51.20(b) of revised Part 51 lists the principal types of actions which require environmental impact statements. Although the list is intended to be reasonably complete, it is not exclusive in the sense that environmental impact statements are to be prepared on the actions listed and no others. Actions which have been subject to an environmental assessment or which appear to be eligible for a categorical exclusion but involve unique, unusual or controversial environmental concerns may also require environmental impact statements.

The types of actions subject to § 51.21 cover a wide spectrum. Although § 51.21(b) of the proposed rule listed some of the more representative types of actions likely to be found in this class, the Commission has decided, after considering the comments, that, instead of trying to refine the descriptions of the actions listed or to prepare a more comprehensive list, the better approach would be to define the boundaries of the class, thus making clear to all concerned that preparation of an environmental assessment would be required for all licensing and regulatory actions subject to subpart A of 10 CFR Part 51 except those requiring an environmental impact statement or those eligible for categorical exclusion.

Sections 51.26–51.29 Scoping.

Comments on the provisions of the regulations implementing the scoping process ran the gamut from general approval to opposing concerns that the regulations are overly structured or that more detailed scoping procedures should be provided. Except for a few minor revisions needed to conform the scoping procedure more closely to NRC licensing practices, the Commission has decided, after careful consideration of these comments, to promulgate these sections of the regulations as originally proposed. Until the NRC has obtained more experience in the conduct of the scoping process, it is difficult to judge whether the scoping procedures contained in the regulations are overly formalized or insufficiently detailed. In the opinion of the Commission, any additional changes in the regulations at this time would be premature.

The Commission is satisfied that its scoping procedures as promulgated comply with CEQ's requirements. Sections 51.26–51.29 of the revised regulations closely track those sections of the CEQ regulations which relate to the scoping process, specifically 40 CFR 1501.1(d), 1501.4(d), 1501.7 and 1508.22.

The scoping process provided in subpart A of revised Part 51 is intended to be informal in nature. Consistent with this approach, the regulations permit but do not require that a public scoping meeting be held. In accordance with § 51.26(b), the decision to call a public scoping meeting in any given instance is at the discretion of the NRC staff. If the NRC staff determines that there is no need to hold a public scoping meeting, participation in the scoping process may be limited to the submission of written comments.

Section 51.28(a) (§ 51.29(a) of the proposed regulations) identifies six classes of persons who must be invited to participate in the scoping process. Section 51.28(b) provides that the NRC staff, at its discretion, may also invite other persons as appropriate. Participants take part in the scoping process by invitation and their role is merely advisory. Decisions respecting the scope of an environmental impact statement are the sole responsibility of the NRC. Section 51.28(c) specifically states that "[p]articipation in the scoping process for an environmental impact statement does not entitle the participant to become a party to the proceeding to which the environmental impact statement relates. Participation in an adjudicatory proceeding is governed by the procedures in 10 CFR 2.714 and 2.715. Participation in a rulemaking proceeding in which the Commission has decided to have a hearing is governed by the provisions in the notice of hearing."

The objectives of the scoping process, which only applies to environmental impact statements, are set out in detail in § 51.29 of the revised regulations. The principal purpose of that process is to define the proposed action which is the subject of the environmental impact statement, determine the scope of the statement and identify those issues which are to be analyzed in depth and those which can be eliminated from detailed study.

While acknowledging the value of the scoping process, several commenters pointed out that it was of limited usefulness to applicants because decisions respecting the scope and the issues to be addressed in an environmental impact statement were made after most of the applicant's environmental studies had been completed. In consequence, at the conclusion of the scoping process, an applicant might find both that previously collected environmental data was unneeded and that extensive amounts of new environmental information must be provided. The observations of the commenters are not without merit. At the same time, the problem cannot be entirely alleviated.

The time frame within which the scoping process may be scheduled is subject to certain recognized limits. Under NEPA, the need to prepare an environmental impact statement depends on the likelihood and the nature of a federal action. In the case of a regulatory agency like the NRC, the occasion for federal action, such as the issuance of a license to construct or operate a nuclear power reactor, does not arise until after a request for the action has been presented. Under these circumstances, the date of receipt of a license application marks the earliest possible date on which the scoping process could be commenced. However, it is usually not practicable to initiate the scoping process on that date since NRC staff and other interested persons must first have an opportunity to become familiar with the application and the environmental issues which it presents.

To limit the point in time at which the scoping process may be formally initiated does not mean that an applicant must be deprived of all assistance and guidance. Even though the conclusions and determinations which may be reached in a particular scoping process cannot be fully predicted in advance, some useful guidance can be provided. Section 51.40 of the revised regulations encourages applicants to consult with the NRC staff on environmental matters. Recognizing applicants' needs for guidance on the scope, relative significance and type of treatment to be accorded issues to be considered in environmental impact statements on federal actions with which they are concerned, the Commission has revised § 51.40(b)(2) of the regulations to make clear that applicants may seek guidance from the

NRC staff on matters subject to the scoping process.

Section 51.33 Draft finding of no significant impact.

Section 51.33 gives the NRC staff discretionary authority to prepare a draft finding of no significant impact and issue the draft finding for public comment. This provision provides a mechanism which the NRC staff may use, should it wish to do so, to obtain public comment on whether a final finding of no significant impact or an environmental impact statement should be prepared and issued. Section 51.33(b) describes certain circumstances in which the preparation of a draft finding of no significant impact may be appropriate. These circumstances include those in which preparation of a draft finding will further the purposes of NEPA. The NRC staff is not required, however, to use this discretionary procedure.

Section 51.45 Environmental Report and Section 51.71 Draft Environmental Impact Statement—Contents.

One commenter noted that the term "cost-benefit analysis" used in §§ 51.20 (b), (c) and (e), 51.23 and 51.26(a) of the Commission's former regulations was not retained in the proposed revision of 10 CFR Part 51 and requested an explanation. The change in terminology from the specific expression "cost-benefit analysis," which denotes a quantitative analysis expressed in monetary terms, to the generic term "analysis," which is intended to include an analysis, evaluation and balancing of important qualitative factors as well as a quantitative cost-benefit analysis, reflects in part the shift in emphasis in the CEQ regulations towards a greater awareness of the quality of the environment and the importance of giving full consideration to unquantified environmental impacts, values, and amenities. This change in emphasis is highlighted in 40 CFR 1502.23 which states that the preparation of a cost-benefit analysis is optional and provides that monetary cost-benefit analyses are not to be included in the main text of environmental impact statements but are either to be incorporated by reference or appended to the statement as an aid in evaluating environmental consequences. Section 1502.23 also states that "For purposes of complying with the Act [NEPA], the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations • • •."

The Commission chose to use the generic term "analysis" because it encompasses all aspects of an environmental analysis, qualitative as well as quantitative. In changing the terminology from "cost-benefit analysis" to "analysis," the Commission did not intend to convey the impression that cost-benefit analyses of quantifiable environmental impacts are no longer required. Sections 51.45(c) and 51.71(d) both provide that "[t]he analysis will, to the fullest extent practicable, quantify the various factors considered." Instead, the Commission intended to make clear that a comprehensive environmental analysis should include the consideration and balancing of qualitative as well as quantitative impacts.

Several commenters requested an explanation of the provisions in §§ 51.45(b) (1) and (3) directing that the environmental impacts of the proposed action be discussed in proportion to their significance and that, to the extent practicable, the environmental impacts of the proposal and the alternatives be presented in comparative form. The commenters expressed concern that these directives would necessitate the preparation of unduly detailed and lengthy analyses on matters which could be adequately dealt with in a more concise manner.

The sentence in § 51.45(b)(1) which reads "Impacts shall be discussed in proportion to their significance," is identical to the first sentence of § 1502.2(b) of the CEQ regulations which provides the following further explanation:

> There shall be only brief discussion of other than significant issues. As in a finding of no significant impact, there should be only enough discussion to show why more study is not warranted.

The sentence in § 51.45(b)(3) which reads "To the extent practicable, the environmental impacts of the proposal and the alternatives should be presented in comparative form," is drawn from § 1502.14 of the CEQ regulations.

Section 1502.14, entitled "Alternatives including the proposed action," states in pertinent part:

> This section is the heart of the environmental impact statement. Based on the information and analysis presented in the sections on the Affected Environment (§ 1502.15) and the Environmental Consequences (§ 1502.16), it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public. In this section agencies shall:
>
> (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
>
> (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.

In the opinion of the Commission these provisions should not necessitate the preparation of unduly detailed or lengthy analyses.

Members of the NRC staff indicated that implementation of the provision in § 51.71(b) that the draft environmental impact statement "include consideration of major points of view expressed on the environmental impacts of the proposed action and the alternatives, • • •" presented certain practical problems in that these major points of view cannot always be adequately identified and evaluated until after the comments on the draft environmental impact statement have been received. For example, when an application for a permit to construct a nuclear power reactor is received, it is customary for the NRC staff to evaluate the environmental information submitted by the applicant. On the basis of this independent evaluation and analysis, the NRC staff then prepares and issues a draft environmental impact statement for public comment. The draft environmental impact statement is circulated to interested state and federal agencies and made available to members of the public. Until comments on the draft statement have been received and analyzed, it is not possible to determine whether all major points of view have been considered. In each case, however, the issue is resolved by the time the final environmental impact statement is completed and issued. In order to accommodate this concern, § 51.71(b) has been revised to make clear that major points of view will be considered in the draft environmental impact statement to the extent sufficient information is available.

Section 51.51 Uranium Fuel Cycle Environmental Data—Table S–3.

On August 2, 1979, the Commission promulgated a final fuel cycle rule which sets out revised environmental impact values for the nuclear waste management and fuel reprocessing parts of the uranium fuel cycle to be included in environmental reports and environmental impact statements for individual light-water nuclear power reactors (44 FR 45362–45374, August 2, 1979; correction notice, 44 FR 56312, October 1, 1979.) The rule, which amended Part 51 of the Commission's existing regulations, became effective September 4, 1979. On June 6, 1983, in response to a series of legal challenges, the U.S. Supreme Court issued a unanimous decision upholding all three versions (original, interim and final) of the S–3 rule (*Baltimore Gas and Electric Co., et al.* v. *NRDC*, 51 U.S.L.W. 4678.) Accordingly, the Commission is incorporating the text of the effective S–3 rule in revised Part 51 (See §§ 51.51, 51.71(d) and 51.75.) Although the Commission has found it necessary to

make certain minor conforming amendments so that the rule will be consistent with the revised format of Part 51, no changes have been made in the substantive provisions of the S–3 rule.

Section 51.53 Suppplement to Environmental Report—Operating License Stage.

Section 51.95 Supplement to final environmental impact statement—Operating License.

Several commenters noted that § 51.53 of the proposed revised regulations, unlike § 51.21 of the Commission's former regulations, does not authorize an applicant engaged in preparing an environmental report in connection with an application for an operating license for a facility to incorporate by reference information contained in the environmental report or the final environmental impact statement prepared in connection with the construction permit for that facility. The Commission did not intend to eliminate this authority; accordingly, § 51.53 has been revised. A similar change has been made in § 51.95, Supplement to final environmental impact statement—Operating license, to authorize the NRC staff to incorporate by reference in a supplement relating to an operating license for a facility any information contained in the final environmental impact statement or in the record of decision prepared in connection with the construction permit for that facility.

Sections 51.53 and 51.95 have also been revised to make clear that the requirements to prepare supplements to the environmental report and the final environmental impact statement on the construction permit for a facility in connection with the issuance of an operating license for that facility are not requirements to repeat at the operating license stage the full-scale environmental review of the facility performed at the construction permit stage. The sole function of these supplements is to update the prior environmental review. Thus the supplements need only address matters which differ from or reflect significant new information concerning matters discussed in the Applicant's Environmental Report—Construction Permit Stage or in the NRC's final environmental impact statement on the construction permit.

Section 51.92 Supplement to final environmental impact statement.

Section 51.92 has been revised to make clear that the NRC staff will prepare a supplement to a final environmental impact statement for a proposed action if that action has not been taken and if there are substantial changes in the proposed action that are relevant to environmental concerns, or if there are significant new circumstances or information which are relevant to environmental concerns and bear on the proposed action or its impacts.

Section 51.73 Request for comments on draft environmental impact statement.

Section 51.100 Timing of Commission action.

Consistent with § 1506.10(c) of CEQ's regulations (40 CFR 1506.10(c)) § 51.73, "Request for comments on draft environmental impact statement," prescribes a minimum comment period of 45 days and specifies that the comment period is to be calculated from the date on which the Environmental Protection Agency's weekly notice announcing the filing of draft and final environmental impact statements is published in the **Federal Register**. Revised Part 51 also provides that the comment periods for supplements to draft and final environmental impact statements are to begin on the dates on which the EPA notices announcing the availability of those supplements are published in the **Federal Register** (see, for example, §§ 51.73, 51.92, 51.95, of revised 10 CFR Part 51.)

Subject to certain exceptions, § 51.100(a) prohibits the Commission from making a decision or issuing a record of decision on a proposed action for which an environmental impact statement is required until the later of the following dates: ninety days after publication by the Environmental Protection Agency of a **Federal Register** notice stating that the draft environmental impact statement has been filed with EPA, or thirty days after publication by the Environmental Protection Agency of a **Federal Register** notice stating that the final environmental impact statement has been filed with EPA.

Several commenters expressed concern that reliance on EPA's publication dates instead of NRC's publication dates would result in confusion and delay. These commenters urged that the **Federal Register** publication date of the applicable NRC notice be used in calculating the requisite time periods for submitting comments or taking NRC actions.

Since its establishment on January 19, 1975, the NRC, in common with other Federal agencies, has followed the customary and uniform practice of calculating the expiration date of an environmental impact statement comment period and the date of the minimum period for review of an environmental impact statement from the date on which the EPA notice[15] listing the specific environmental impact statement was published in the **Federal Register**. This arrangement has not caused any uncertainty or confusion. In accordance with EPA practice, all draft and final environmental impact statements received by EPA prior to noon on a given Friday are routinely listed in the EPA notice of availability published in the **Federal Register** on the following Friday. Similarly, all draft and final statements received by EPA after noon on a given Friday are listed in the **Federal Register** notice published by EPA two weeks later. The date on which the EPA notice is published in the **Federal Register** is the date from which the minimum periods of review for all environmental impact statements listed in the notice, including any NRC environmental impact statements listed, are calculated. Because the publication schedule for EPA notices is firmly fixed and the time when an environmental impact statement is filed with EPA is known to the filing agency, the date on which a comment period begins or from which the 90 day or 30 day review period is to be calculated can be known with certainty. This NRC practice is well established, has not resulted in confusion and uncertainty, and is consistent with the provisions of the CEQ regulations. Accordingly, the changes suggested by the commenters have not been adopted.

Section 51.104 NRC proceedings using public hearings; Consideration of environmental impact statement.

Section 51.104 has been extensively revised to reflect current NRC practice respecting the consideration of environmental issues in licensing hearings. In accordance with accepted practice, § 51.104 provides that the NRC staff may not place a final environmental impact statement in evidence in a proceeding or present the NRC staff position on environmental issues until after the final environmental impact statement has been filed with the Environmental Protection Agency, furnished to commenting agencies and made available to the public. Section 51.104 also provides that in those proceedings in which the NRC staff has determined that no environmental impact statement need be prepared for the proposed action, any party to the proceeding may take a position and offer evidence on those aspects of the proposed action which are within the scope of NEPA and subpart A of 10 CFR Part 51. The opportunity accorded parties to present evidence on environmental issues is subject to the Commission's Rules of Practice, for example, as set out for formal adjudications in Subpart G of 10 CFR Part 2, and to any specific procedural constraints which may be placed on the scope of a particular hearing in order to

[15] Prior to December 5, 1977, these notices were published by CEQ.

manage the hearing efficiently. For example, in a hearing limited solely to the consideration of antitrust issues, presentation of evidence on environmental matters would be inappropriate. In order to acknowledge the Commission's authority to control the conduct of its licensing hearings in a positive way, § 51.104(b) has been revised by adding the words "unless the Commission orders otherwise."

Section 51.106 Public hearings in proceedings for issuance of operating licenses.

Section 51.106 incorporates the provisions of former § 51.53, which relates to operating license hearings, into revised Part 51. Although § 51.106 was not included in the proposed rule, the Commission did not intend to revoke this regulation which was promulgated in 1974 and amended in 1981 in accordance with the customary notice and comment procedure.

Conforming Amendments

Following enactment of the Nuclear Waste Policy Act of 1982, Pub. L. 97–425, January 7, 1983, 96 Stat. 2201–2263, the Commission initiated a review of the licensing procedures in 10 CFR Part 60, "Disposal of High-Level Radioactive Wastes in Geologic Repositories: Licensing Procedures," to determine what changes may be necessary and appropriate. As part of that review, the Commission will also determine whether conforming changes to other parts of the regulations, including Part 51, are needed. In view of these circumstances, conforming amendments to 10 CFR Part 60 are not being promulgated at this time in connection with this final rule. In the interim, pending completion of this review, a minor conforming amendment has been made to 10 CFR 2.101(f).

Categorical Exclusions

In the proposed rule, as published March 3, 1980, the Commission requested comments on the classes of actions proposed to be excluded from the NEPA process as categorical exclusions and suggestions on types of actions for which additional categorical exclusions might be established. One commenter recommended that the Commission define with greater specificity the "special circumstances" (see § 51.22(b) of the proposed rule) under which an environmental assesement or an environmental impact statement would be prepared for an action which otherwise would be categorically excluded from the NEPA process. Ten commenters submitted comments on one or more of the categorical exclusions contained in the proposed rule. These comments focused on categorical exclusions 4, 9, 10, 11, 12, 13, portions of categorical exclusion 14, and 15. Three commenters suggested additional types of actions for inclusion in the rule as categorical exclusions. Brief descriptions of these comments and the Commission's responses follow. The text of each categorical exclusion is reproduced below *as it appeared in the proposed rule.* The bracketed reference identifies the section of the final rule in which the category is listed.

Section 51.22(b)

One commenter recommended that the Commission define with greater specificity the "special circumstances" in proposed § 51.22(b) which the Commission may invoke to require an environmental assessment or environmental impact statement for actions otherwise categorically excluded. The commenter also urged the Commission to provide notice and opportunity for affected parties to present their views before a decision is made to invoke the special circumstance exception.

The Commission disagrees with the commenter. The Commission may wish, as a matter of discretion, to have the benefit of an environmental assessment or an environmental impact statement in considering the desirability of a proposed course of action, even though, as a strict legal matter, neither may be required. A major purpose of proposed § 51.22(b) is to preserve this necessary flexibility. In addition, it is impossible to identify in advance the precise situations which might move the Commission in the future to determine that special circumstances exist. Therefore, the term "special circumstances" has not been further defined. For similar reasons, the Commission has decided not to require the use of notice and comment procedures in determining when to prepare an environmental assessment or an environmental impact statement on an action which except for special circumstances would be eligible for categorcial exclusion. Although there may be occasions when the Commission will wish to seek comment from affected persons or the public at large before making a finding of special circumstances, the Commission believes that its responsibilities for protecting the public health and safety and giving appropriate consideration to environmental values will be best served if it retains the flexibility and authority to direct its staff to prepare environmental assessments or environmental impact statements very early in the decisionmaking process. However, a notice of intent to prepare an environmental impact statement will be published pursuant to §§ 51.26 and 51.116.

Section 51.22(c)

Proposed Category 4.—Entrance into or amendment, suspension, or revocation of an agreement with a State pursuant to section 274 of the Atomic Energy Act of 1954, as amended, providing for assumption by the State and discontinuance by the Commission of certain regulatory authority of the Commission. [§ 51.22(c)(4)]

The only substantive comments received concerning this categorical exclusion were those contained in the letter of October 29, 1979 from CEQ staff counsel to the Executive Legal Director of NRC.[16] The author of this letter concludes that insofar as Category 4 would "exclude new agreements and amendments to agreements with States, pursuant to Section 274 of the Atomic Energy Act of 1954, from review in environmental impact statements or environmental assessments * * * [the] Council cannot endorse this categorical exclusion as written." Except for the comments of the Department of Natural Resources of the State of Georgia, which expressed general support for CEQ's views, including the views contained in the October 29, 1979 letter from CEQ published in Appendix B [17] to the proposed rule, no other comments were received on proposed categorical exclusion 4.

Proposed categorical exclusion 4 addresses a limited and highly specific type of federal action. The main thrust of the CEQ staff comment is that the NRC action of entering into or amending a section 274 Federal-State Agreement should remain subject to the NEPA process because subsequent regulatory actions which the State is permitted to take by virtue of the agreement are similar to regulatory actions which would have been taken by NRC in the absence of an agreement and which would, because of their status as Federal actions, clearly be subject to NEPA. The CEQ comment does not address the question of how licensing and regulatory actions taken by the State during the life of a section 274 agreement are to be evaluated in an environmental impact statement or in an environmental assessment prepared at the time of entrance into the agreement on the limited Federal action of entrance into the agreement when information on the kind and number of State regulatory actions to be taken during the period the agreement is in effect cannot be known and in consequence the environmental effects of those actions cannot be ascertained. CEQs analysis, which is founded on the premise that the State is acting as an agent for the Federal government and is exercising delegated Federal powers, does not recognize the

[16] 45 FR 13739 at 13786, March 3, 1980.

[17] *Id.*

clear line of separation established by the agreement between Federal and state actions.[18]

The Federal-State agreement authorized by section 274 of the Atomic Energy Act of 1954, as amended, does not constitute a delegation or transfer of Federal authority to the States. Instead, the Agreement specifies the conditions under which the States may exercise their own sovereign authority. Under the provisions of a section 274 agreement, the NRC's regulatory authority over source, byproduct and special nuclear material, conferred upon it by the Atomic Energy Act of 1954, as amended, is discontinued, thereby enabling the States, in the exercise of their inherent police powers to protect the public health and safety of their citizens, to assume regulatory authority over those materials. Under this arrangement, except as expressly provided under 10 CFR Part 150, once a state has assumed regulatory responsibility under a section 274 agreement, the NRC is precluded from exercising direct regulatory control over individual state licensees. Under section 274j of the Act, the Commission retains certain residual powers which permit the Commission to terminate or suspend all or part of a State agreement and reassert its own licensing and regulatory authority if it finds that "• • • (1) such termination or suspension is required to protect the public health and safety, or (2) the State has not complied with one or more of the requirements of this section [§ 274]." In aid of this residual authority, section 274j also provides that the Commission "• • • shall periodically review such agreements and actions taken by the States under the agreements to ensure compliance with the provisions of this section [§ 274] • • •."

As indicated previously, any attempt on the occasion of entrance into a Federal-State agreement, to obtain useful information on the environmental impact of subsequent State regulatory actions which might be taken during the period the agreement remains in force, is likely to yield disappointing and speculative results. Except for matters relating to uranium mills and mill tailings for which the Uranium Mill Tailings Radiation Control Act of 1978, Pub. L. 95-604, November 8, 1978, has made special provision, many of the licensing and regulatory actions which might be taken by States under a section 274 agreement are unlikely to have any significant environmental effect. In many instances, the state regulatory actions will be similar to federal actions for which the Commission has established a categorical exclusion in § 51.22(c) of revised Part 51. In the case of other state actions, the only significant environmental effects will be those caused by the radioactive properties of the regulated materials. With respect to those types of actions, the environmental impact attributable to the Federal action of entering into a section 274 agreement should also be minimal because the statutory requirements governing § 274 agreements provide assurance that so far as radiological hazards are concerned the States will regulate the materials covered by the agreements in a manner similar to the way in which the materials were regulated by NRC.

Congress enacted the Federal-State Amendment to the Atomic Energy Act in 1959. Ten years later the National Environmental Policy Act of 1969 became law. The law is clear that "NEPA does not repeal by implication any other statute • • •"[19] and that NEPA's policies and goals "are supplementary to those set forth in existing authorizations of Federal agencies" and should not "in any way affect the specific statutory obligations of any Federal agency."[20] Accordingly, NEPA does not alter the meaning of section 274 and the clear line which it establishes between state and federal actions.

As enacted, NEPA only applies to major *federal actions* significantly affecting the human environment. To use Section 274 of the Atomic Energy Act of 1954, as amended, as a vehicle for extending NEPA to state actions and thereby broadening the scope of NEPA would be tantamount to giving the Commission the power to override the clear intent of Congress. Except to the extent that Congress has required states to consider the environmental impacts of uranium milling activities and mill tailings,[21] Congress has declined to extend NEPA to the states. Absent action by the Congress broadening the scope of NEPA, there is no sound basis in law for extending the NEPA process to actions taken by states in the exercise of their police powers in accordance with the terms of a section 274 Federal-State agreement.

Proposed Category 9.—Issuance of an amendment to a permit or license for a reactor pursuant to Part 50 of this chapter, which changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in Part 20 of this chapter, or which changes an inspection or a surveillance requirement, provided that (i) the amendment does not involve any significant hazards consideration, (ii) there is no change in the types or amounts of any effluents that may be released offsite, and (iii) there is no associated increase in individual or cumulative occupational radiation exposure. [§ 51.22(c)(9)]

The comment on this categorical exclusion is discussed in conjunction with a similar comment on Category 11.

Proposed Category 10.—Issuance of an amendment to a permit or license pursuant to Parts 30, 40, 50, or 70 of this chapter which (i) changes insurance and/or indemnity requirements, or (ii) changes recordkeeping, reporting, or administrative procedures or requirements. [§ 51.22(c)(10)]

One commenter suggested that changes in insurance or indemnity requirements could have a direct impact on certain activities and hence should not be categorically excluded. The commenter provided no further elaboration of his position. The Commission recognized in its discussion and finding supporting this exclusion in the proposed rule that to the extent the financial arrangements of licensees may be affected by changes in insurance and/or indemnity requirements, economic and social consequences will result. However, the Commission viewed, and continues to view, as extremely remote the possibility that the environmental impact of licensed activities would be altered by changes in insurance and/or indemnity requirements; such changes would not authorize construction or operation of licensed activities or effect changes in the permitted types or amounts of radiological effluents. Moreover, if unusual or unique circumstances are found to exist, the Commission has discretion under § 51.22(b) to conduct a environmental review. The Commission is retaining this categorical exclusion. However, the Commission has revised the description of Category 10, to make clear that changes in surety requirements are included within the scope of the exclusion.

Proposed Category 11.—Issuance of amendments to licenses for fuel cycle plants and radioactive waste disposal sites as identifed in §§ 51.20(b) or 51.21(b) of the this subpart which are administrative, organizational, or procedural in nature, or which result in a change in process operations or

[18] In *Natural Resources Defense Council* v. *NRC* (C.A.D.C. No. 77-1570, *per curiam* Order, January 6, 1978), the U.S. Court of Appeals for the District of Columbia Circuit held that an Agreement State is not a federal agent or delegate under 42 U.S.C. 2021, that an Agreement State licensing action is not a "Federal action" for purposes of NEPA, and that NRC involvement with Agreement States is not federal action subject to NEPA. See, also *Northern States Power Company* v. *Minnesota*, 447 F.2d 1143, 1149-50 (8th Cir. 1971), affirmed 405 U.S. 1035 (1972).

[19] *Vermont Yankee Nuclear Power Corp.* v. *Natural Resources Defense Council, Inc.*, 435 U.S. 519 at 548, citing *Aberdeen & Rockfish R. Co.* v. *SCRAP*, 422 U.S. 289, 319 (1975), *see also United States* v. *SCRAP*, 412 U.S. 669, 694 (1973).

[20] *United States* v. *SCRAP*, 412 U.S. 669, 694 (1973); see also *Aberdeen & Rockfish R. Co.* v. *SCRAP*, 422 U.S. 289 (1975); *Flint Ridge Development Co.* v. *Scenic Rivers Assoc.*, 426 U.S. 776 (1976).

[21] Uranium Mill Tailings Radiation Control Act of 1978, Pub. L. 95-604, November 8, 1978, Sec. 204, 92 Stat. 3021 at 3038-3038, 42 U.S.C. 2021.

equipment, provided that (i) there is no increase in the types or amounts of effluents that may be released offsite, (ii) there is no associated increase in individual or cumulative occupational radiation exposure, (iii) there is no significant construction impact, and (iv) there is no increase in the potential for or consequences from radiological accidents. [§51.22)(c)(11)]

One commenter, while not objecting to the substance of the exclusion of some types of changes in process operation or equipment, recommended the addition on two further limitations on the scope of the exclusion. The first limitation would require that there be no potential for an accident of a different type than evaluated previously. The Commission views this limitation as unnecessary because the proposed rule already encompasses this concern and is even broader in that consequences of postulated accidents will also be examined. Specifically, proposed § 51.22(c)(11) would exclude a change in process operations or equipment only if, among other things, there is no increase in the *potential for or consequences* from radiological accidents (emphasis added). Hence, if a proposed change raises a credible possibility of a radiological accident(s) different from those previously evaluated, then the accident potential as well as the consequences will be examined.

The second suggested limitation would require that there be no reduction in the margin of safety of any feature. The Commission does not accept this recommendation because it is overbroad. The recommendation is overbroad because it would apply to "any feature," including, if read literally, devices having no relationship to protection of environmental values or radiological health or safety. Moreover, the recommendation does not recognize the possibility that a slight reduction in a conservative margin of safety of a particular feature may result, without jeopardizing in any way the public health and safety, in a net increase in the overall safety of the facility by allowing quicker response times, higher flow rates, more accurate readouts, etc., in other features of the facility.

Another commenter recommended that the scope of categorical exclusions 9 and 11 be enlarged to permit exclusion so long as there is no *significant* increase in the types or amounts of effluents or exposure to radiation (emphasis added). The proposed rule permits exclusion only if there is no increase. The commenter based his suggestion on the language of proposed § 51.21(b)(2) which would require an environmental assessment only when there is a significant increase in effluents or exposures. The Commission accepts the recommendation in part and has amended categorical exclusions 9 and 11 by adding the word "significant" in each proviso of each exclusion where the word does not already appear. This change is consistent with the definition of categorical exclusion which speaks in terms of significant impacts. See §51.14(a)(1).

Proposed Category 12.—Issuance of an amendment to a license pursuant to Parts 50 and 70 of this chapter relating solely to safeguards matters (i.e., protection against sabotage or loss or diversion of special nuclear material) or issuance of an approval of a safeguards plan submitted pursuant to Parts 50, 70, and 73 of this chapter, provided that the amendment or approval does not involve any significant construction impacts. [§ 51.22(c)(12)]

Two commenters objected to the Commission's proposed categorical exclusion of certain license amendments relating to safeguards and physical security plans. Both commenters believe that the excluded actions can have a significant effect on the environment. One commenter interpreted the exclusion as excluding *all* actions relating to safeguards and physical security which do not involve significant construction impacts.

The Commission believes that the commenters read the exclusion more broadly than intended. As the discussion and finding supporting the proposed exclusion explains, the excluded license amendments are needed to implement new safeguards regulations in license provisions and permit modifications to licensee safeguards programs established under existing requirements. The discussion and finding describe the general types of amendments within the scope of the exclusion; they are largely of a minor procedural nature. Substantive and significant amendments to the regulations from the standpoint of environmental impact do not fall within the exclusion. These actions are subject to the environmental review requirements of §§ 51.20 or 51.21. Some clarifying changes have been made in the description of this categorical exclusion.

Proposed Category 13.—Approval of package designs for the delivery of licensed materials to a carrier for transportation. [§ 51.22(c)(13)]

Two commenters objected to the categorical exclusion of package design approvals (§ 51.22(c)(13)). Both commenters essentially argue that there are instances when the Commission's actions regarding transportation are potentially so significant that full NEPA review is essential. The Commission believes the commenters misconstrue the scope of this exclusion by reading it too broadly. As explained in the discussion and finding supporting the proposed exclusion of package design approvals, certificates of compliance approving package designs for packages to be used in the transportation of radioactive materials are issued upon demonstration that the package designs meet applicable performance standards contained in Part 71 of the Commission's regulations. Although it is expected that packages manufactured in accordance with approved designs will be used to transport radioactive materials, the certificates of compliance do not authorize the actual transportation of those materials. Furthermore, at the time a certificate approving a package design is issued, no specific information is available on the number of packages that will be manufactured or the manner in which they will be used.

The Commission has previously considered the impacts of the actual transportation of radioactive materials in packages meeting the performance standards of 10 CFR Part 71 in a generic environmental impact statement (Final Environmental Statement on the Transportation of Radioactive Materials by Air and Other Modes, NUREG–0170, December, 1977) and has concluded that such impacts are small. Since this generic environmental impact statement was issued, there has been no relaxation in the performance standards which the Commission uses in acting on requests for package approvals. Under these circumstances, there is no need for nor any useful purpose to be served by requiring a second NEPA review in connection with the issuance of individual package design approvals. Accordingly, the Commission has retained this categorical exclusion.

Proposed Category 14.—Issuance, amendment, or renewal of the following types of materials licenses issued pursuant to 10 CFR Parts 30, 40, or 70:

(i) Distribution of devices and products containing radioactive material to general licensees and persons exempt from licensing.

(ii) Medical licenses.

(iii) Nuclear pharmacies.

(iv) Teletherapy licenses.

(v) Licenses to academic institutions for educational purposes.

(vi) Industrial radiography.

(vii) Acceptance of packaged radioactive wastes from others for transfer to licensed land burial facilities.

(viii) Irradiators (dry storage—self-contained).

(ix) Irradiators (wet storage—panoramic).

(x) Gauging devices, analytical instruments, and other devices utilizing sealed sources.

(xi) Source material licenses for fabrication of the products specified in 10 CFR 40.13, fabrication of military munitions, and laboratory use for research and development.

(xii) Well logging.

(xiii) Research and development

licenses involving less than ten curies of radioactive material.

[§ 51.22(c)(14)(i)–(xvi)—The descriptions and order of some subcategories have been changed.]

A number of comments were received on this categorical exclusion. One commenter suggested that this section should be revised to make clear that generic or programmatic impact statements are not excluded. This comment misconstrues the purpose of and the findings necessary to support a categorical exclusion. By definition, a categorical exclusion means a category of actions "which do not individually or cumulatively have a significant effect on the human environment * * *." See 10 CFR 51.14(a)(1). A generic impact statement on a proposed action having no significant environmental impact is not required under NEPA and would serve only to divert scarce agency resources from more pressing business.

A number of comments were received on specific subcategories of exclusions within this section. Two commenters suggested that the exclusion of materials licenses issued to academic institutions for educational purposes (§ 51.22(c)(14)(v)) be clarified to make clear that licenses for nuclear reactors at such institutions are not excluded. The Commission agrees with the commenters that the exclusion is not intended to cover licenses to construct and operate nuclear reactors at academic institutions. Those licenses are issued under Part 50 of the Commission's regulations. Since this categorical exclusion explicitly applies only to "materials licenses issued pursuant to 10 CFR Parts 30, 31, 32, 33, 34, 35, 40 and 70," no change to the regulation is required. However, the discussion and finding supporting the academic institution subcategory has been revised to make clear that only materials licenses are categorically excluded.

Another commenter correctly noted with respect to the discussion and finding supporting the exclusion for industrial radiography materials licenses (§ 51.22(c)(14)(vi)) that an average occupational exposure per individual radiographer of less than 0.4 rem per year is not "less than 1%" of the permissible exposure as stated. The correction has been made.

One commenter recommended that the amount of packaged radioactive waste which may be excluded should be limited as to quantity. (Proposed § 51.22(c)(14)(vii).) The Commission has reexamined this categorical exclusion in light of the comment and, in response, has placed two limits on the exclusion. In order to be eligible for the exclusion, the total possession limit for packaged radioactive wastes held in interim storage at the same time may not exceed 50 curies. In addition, the period of time during which any single package of radioactive waste may be held in interim storage may not exceed 180 days. [See § 51.22(c)(14)(xii).]

One commenter, a state agency, recommended that the categorical exclusion for source material licenses for the fabrication of certain products (proposed § 51.22(c)(14)(xi)) be eliminated. The commenter referred to the experience it had with a source material licensee within its geographic boundaries and listed a number of reasons why, in its view, activities under such licenses raise the potential for significant environmental impacts. The Commission does not believe that all of the commenter's arguments are germane to the proposed exclusion. However, the discussion and finding supporting the exclusion of source material licenses does not clearly address the possibility of off-site environmental impacts resulting from accidents in handling, processing, or disposing of large quantities of depleted uranium at licensed facilities. Therefore, the Commission has withdrawn this exclusion. The Commission has, however, added two new categorical exclusions: one for source material licenses which authorize the possession and use of depleted uranium as shielding material in containers or devices. [§ 51.22(c)(14)(ix)]; and one for the possession, manufacturing, processing, shipment, testing, or other use of depleted uranium military munitions [§ 51.22(c)(14)(xv).]

One commenter objected to the categorical exclusion for well logging (proposed § 51.22(c)(14)(xii)) arguing principally that if a source is lost in underground operations and consequently abandoned, the possibility exists that the radioactive material could escape into an aquifer and preclude or compromise the use of the aquifer as a source of drinking water or irrigation water. In support of this comment, the commenter cited the loss of a one curie americium-beryllium source in a mineral exploration bore in Texas and the subsequent decontamination efforts. The Commission has carefully considered the comment but has concluded, in the light of past regulatory experience and current licensing practices, that the environmental impact of licensing actions authorizing use of sealed sources and radioactive tracer materials in well-logging procedures is negligible. Accordingly, the Commission has retained this categorical exclusion. Some minor editorial revisions have been made in the description of the exclusion. [§ 51.22(c)(14)(xi).]

Proposed Category 15.—Issuance, amendment or renewal of licenses for import of nuclear facilities and materials pursuant to Part 110 of this chapter, except for import of spent power reactor fuel. [§ 51.22(c)(15).]

One commenter stated that imports of nuclear facilities and materials pursuant to Part 110 of the Commission's regulations may have NEPA implications and that this category should be either limited in scope or eliminated as a categorical exclusion (§ 51.22(c)(15)). No elaboration of the comenter's position is provided. Another commenter implied that a full NEPA review of the transportation of imports might be essential in some instances. The Commission believes that no change to this proposed exclusion is necessary. The Commission is unable to respond to the first comment because of its generality. As to the second comment, the discussion and finding which accompanied the proposed exclusion specifically stated that import licenses do not authorize transportation of imported facilities and materials within the United States. Hence, transportation issues are not germane to this exclusion. Moreover, the discussion and finding also noted that an NRC final environmental statement (Final Environmental Statement on the Transportation of Radioactive Materials by Air and Other Modes, NUREG–0170, December 1977) concluded that the environmental impact of the transportation of imported radioactive materials from the time of their arrival in the United States until they reach their ultimate destination is negligible. Hence, the exclusion of this category of actions is appropriate.

Additional Types of Actions Suggested as Categorical Exclusions

Two commenters suggested that an additional exclusion be created for the issuance, renewal or amendment of byproduct, source and special nuclear material licenses to holders of construction permits for power reactors, where such licenses expire upon the issuance of an operating license. The Commission does not agree that an additional categorical exclusion is necessary or appropriate for these actions. Although the comment is somewhat general, the Commission interprets it as being directed at devices containing sources used for calibration purposes at the site, neutron startup sources used for initiating fission in the reactor core, and unirradiated reactor fuel stored at the site subsequent to issuance of a construction permit but prior to issuance of the operating license. Sources contained in devices used for calibrating various equipment at the construction site are already categorically excluded. [See § 51.22(c)(14)(viii).] Therefore, an exclusion for licensing these devices is unnecessary. However, it is not appropriate for the Commission to

categorically exclude neutron startup sources or unirradiated reactor fuel from revised Part 51 because the environmental impacts of licensing these sources are specifically considered in the Commission's review of each nuclear power reactor facility.

Two commenters also suggested that the renewal of a construction permit issued for a power reactor pursuant to 10 CFR 50.55(b) be categorically excluded. The Commission does not agree that an exclusion for this class of actions is appropriate. The completion date specified in a construction permit for a facility may be extended by the Commission for a reasonable period of time for good cause shown (10 CFR 50.55(b)). The ultimate disposition of an extension request will depend to a great extent upon the particular facts alleged by the licensee. For instance, the discovery of unanticipated environmental conditions or impacts during construction may be cited by a licensee as a contribution factor for the delay in completing construction on a timely basis. Since each extension request will be heavily fact dependent and may involve fundamental environmental questions, the Commission cannot conclude on a generic basis that the renewal of a construction permit will have no significant effect on the human environment. Therefore, a categorical exclusion for this class of actions is not warranted.

Two commenters also requested a categorical exclusion for any change in a principal environmental protection commitment by a holder of a construction permit or an operating license which does not necessitate the issuance of an amendment to such permit or license. The Commission believes that an exclusion for these types of actions is not warranted. The staff's environmental review of license applications is based in large part upon the environmental information submitted to it by the license applicant. License applicants commonly commit to taking certain actions relative to environmental protection objectives. Since the staff's evaluation of the environmental impacts of a proposed facility is premised on these commitments, any deviations therefrom subsequent to the issuance of a permit or license may result in environmental impacts which the Commission has not previously considered. Therefore, this category of actions should not be categorically excluded.

One commenter suggested a categorical exclusion similar to existing 10 CFR 51.5(d)(4) to exclude actions not specifically identified as requiring either an environmental assessment or impact statement. This comment misconceives the nature of a categorical exclusion. An exclusion must be supported by a factual finding that a category of actions does not individually or cumulatively have a significant effect on the human environment. The Commission has endeavored to identify categories of actions which are appropriate subjects for environmental impact statements, environmental assesments or categorical exclusion. Since no factual findings can be made to support actions which are at this time either unidentified or unidentifiable, a general categorical exclusion is not appropriate.

One commenter recommended the categorical exclusion of certain NRC actions under the proposed emergency planning rule.[22] Specifically, the commenter suggested that NRC actions requiring licensees to shut down operating facilities because of inadequate state and local emergency plans, allowing startup following a determination or redetermination of adequacy, or allowing continued operation despite certain inadequacies in the emergency plans should qualify as categorical exclusions. The preamble which accompanied the final emergency planning rule makes clear that NRC actions leading to the possible shutdown of an operating reactor will proceed in accordance with existing NRC enforcement procedures. See 45 FR 55403, August 19, 1980. Consistent with CEQ guidance, § 51.10(d) of revised Part 51 provides that Commission actions initiating or relating to administrative enforcement actions or proceedings are not subject to section 102(2) of NEPA. Hence proceedings to shut down reactors (or other possible enforcement actions) for failure to comply with emergency planning requirements are not within the scope of Part 51, and a categorical exclusion for these actions is not necessary. However, the Commission agrees with the comment that actions authorizing renewed start up of reactors after compliance with emergency planning requirements has been demonstrated should be categorically excluded. A key assumption in the Commission's decision not to prepare an environmental impact statement for the emergency planning rule was that shutdowns of nuclear power plants as a result of actions taken under the rule are expected to be infrequent and of short duration.[23] Therefore, it is very unlikely that the resumption of operation at a particular facility would have a significant effect on the human environment. Morever, the Commission retains discretion to require an environmental assessment in special circumstances. As the commenter recognized, special circumstances may include resumed operation after a long shutdown or a shutdown involving multiple facilities. Accordingly, the Commission has categorically excluded actions authorizing the resumption of operation, provided that the basis for the authorization relates solely to compliance or recompliance with emergency planning requirements. [§ 51.22(c)(18)]

Section 51.22 of revised Part 51 sets out the procedures to be followed to establish categorical exclusions [§ 51.22(a)], describes the function of the categorical exclusion to exclude certain types of actions from environmental review requirements [§ 51.22(b)] and lists those categories of actions which the Commission has declared to be categorical exclusions [§ 51.22(c)]. Section 51.22(b) also provides that in special circumstances the Commission may prepare an environmental impact statement or an environmental assessment on an action covered by a categorical exclusion.

The Commission has identified eighteen categories of actions which meet the requirement for a categorical exclusion. A description of each of these categories, with the requisite finding, follows:

Category to Actions

1. Amendments to Parts 0, 1, 2, 4, 7, 8, 9, 10, 11, 14, 19, 21, 25, 55, 75, 95, 110, 140, 150, or 170 of this chapter, and actions on petitions for rulemaking relating to these amendments.

Discussion and Finding

Except for Part 8, Interpretations, the regulations in the following parts relate to matters of Commission organization, administration and procedure.

Part 0—Conduct of Employees
Part 1—Statement of Organization and General Information
Part 2—Rules of Practice for Domestic Licensing Proceedings
Part 4—Nondiscrimination in Federally Assisted Commission Programs
Part 7—Advisory Committees
Part 8—Interpretations
Part 9—Public Records
Part 10—Criteria and Procedures for Determining Eligibility for Access to Restricted Data or National Security Information
Part 14—Administrative Claims under Federal Tort Claims Act
Part 140—Financial Protection Requirements and Indemnity Agreements
Part 150—Exemptions and Continued

[22] The final emergency planning rule amending 10 CFR Parts 50 and 70 adopted by the Commission was published on August 19, 1980 (45 FR 55402). The rule became effective on November 3, 1980.

[23] See 45 FR 55413-55415, August 19, 1980, Emergency Planning; Negative Declaration; Finding of No Significant Impact for Effective Rule Changes. See also, 45 FR 3913 at 3918, January 21, 1980, Emergency Planning; Draft Negative Declaration for Proposed Rule Changes.

Regulatory Authority in Agreement States under Section 274
Part 170—Fees for Facilities and Materials Licenses and Other Regulatory Services under the Atomic Energy Act of 1954, as amended.

The regulations in these parts serve the dual purpose of making needed information readily available to the public and providing procedures for the orderly conduct of Commission business. These regulations in and of themselves will not affect the volume of that business.

In some instances, the regulations implement Federal laws and executive orders which prescribe specific procedures and policies for the conduct of government business. These laws include the Administrative Procedure Act (15 U.S.C. 551 et seq.), the Freedom of Information Act (5 U.S.C. 552), the Privacy Act of 1974 (Pub. L. 93-579), the Government in the Sunshine Act (5 U.S.C. 552b), the Federal Advisory Committee Act (Pub. L. 92-463, 86 Stat. 770), certain provisions in 18 U.C.C. 201-209 dealing with conflicts of interest in Federal employment, and House Concurrent Resolution No. 175, July 11, 1958, on the Code of Ethics for Government Service (72 Stat. B12, 5 U.S.C.A. § 7301, Note.) Executive Order 11222, May 8, 1965, provides in part that "[t]he elimination of conflict of interest in the Federal service is one of the most important objectives in establishing general standards of conduct."

In some instances, application of the regulations will have economic or social, but not environmental consequences. Examples include: Part 140 which contains regulations implementing the provisions of the Price-Anderson Act relating to financial protection and indemnity agreements; Part 170 which prescribes the schedule of Commission fees; and Part 4 which contains regulations on nondiscrimination which implement the provisions of Title VI of the Civil Rights Act of 1964 and Title IV of the Energy Reorganization Act of 1974.

Formal interpretations of the Commission's regulations authorized by the Commission and prepared by the General Counsel are codified in Part 8. Although these interpretations may address matters of substance as well as procedure, the issuance of a formal interpretation and its inclusion in Part 8 of the Commission's regulations is an action without environmental effect.

The regulations in the following parts impose requirements on licensees.

Part 11—Criteria and Procedures for Determining Eligibility for Access to or Control Over Special Nuclear Material
Part 19—Notices, Instructions, and Reports to Workers; Inspections
Part 21—Reporting of Defects and Noncompliance
Part 25—Access Authorization for Licensee Personnel
Part 55—Operators' Licenses
Part 75—Safeguards on Nuclear Material—Implementation of US/IAEA Agreement
Part 95—Security Facility Approval and Safeguarding of National Security Information and Restricted Data
Part 110—Export and Import or Nuclear Facilities and Materials

Part 11 sets forth critieria and procedures for determining the eligibility of individuals for access to or control over formula quantities of special nuclear material in transportation and certain types of fuel cycle facilities. The requirements in Parts 19 and 21 relate to such matters as inspections, reports, record-keeping and posting of documents and notices. The requirements in Parts 25 and 95 relate to the protection of classified national security information and restricted data and the authorization for individuals to have access to such information. Part 55 establishes procedures and criteria for the issuance of licenses to operators and senior operators of licensed facilities. These regulations include procedures for filing and requirements for approval of applications, including requirements relating to written examinations, operating tests, and medical examinations. Part 75 sets forth reporting and recordkeeping requirements related to implementation of the US/IAEA Safeguards Agreement and provides for access to licensed facilities by IAEA inspectors. Although the regulations in Parts 11, 19, 21, 25, 55, 75, and 95 address matters of substance and have a social and economic effect, they do not have a significant effect on the environment.

Part 110 sets out the procedures and criteria for issuance of licenses to export and import nuclear materials and facilities. In the case of export licenses, the procedures and criteria have been specified by the Congress in the Nuclear Non-Proliferation Act of 1978 (Pub. L. 95-242, 92 Stat. 120) which does not include environmental impact as a factor to be considered. Consistent with this stautory mandate, the Commission has limited the scope of revised Part 51 to NRC's domestic licensing and related regulatory functions. Section 51.1 specifically states that the regulations in Part 51 "do not apply to export licensing matters within the scope of Part 110 . . ." To the extent that they apply to import licenses, the regulations in Part 110 are largely procedural. In addition, as explained in the discussion and finding for Categorical Exclusion 15, which applies to the issuance, amendment or renewal of licenses for the import of nuclear facilities and materials pursuant to Part 110, except for the import of spent power reactor fuel, the limited action of importation, which is the only action authorized by an import license, has no significant effect on the environment.

Accordingly, for the reasons stated, the Commission finds that amendments to Parts 0, 1, 2, 4, 7, 8, 9, 10, 11, 14, 19, 21, 25, 55, 73, 95, 110, 140, 150, or 170 of its regulations and actions on petitions for rulemaking relating to such amendments (Category 1) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 1, as a categorical exclusion, and directs that Category 1, be listed in §51.22(c) as a categorical exclusion.

Category of Actions

2. Amendments to the regulations in this chapter which are corrective or of a minor or nonpolicy nature and do not substantially modify existing regulations, and actions on petitions for rulemaking relating to these amendments.

Discussion and Finding

Minor amendments of this type are sometimes needed to update, clarify or eliminate an ambiguity in an existing regulation. Since these amendments are usually editorial and do not change the substance of an existing regulation they can neither increase nor decrease any environmental impact which the existing regulation may have.

Accordingly, the Commission finds that amendments to its regulations which are corrective or of a minor or nonpolicy nature and do not substantially modify existing regulations and actions on petitions for rulemaking relating to such amendments (Category 2.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 2. as a categorical exclusion, and directs that Category 2. be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

3. Amendments to Parts 20, 30, 31, 32, 33, 34, 35, 40, 50, 51, 60, 61, 70, 71, 72, 73, 81, or 100 of this chapter which relate to (i) procedures for filing and reviewing applications for licenses or construction permits or other forms of permission or for amendments to or renewals of licenses or construction permits or other forms of permission; (ii) recordkeeping requirements; or (iii) reporting requirements; and actions on petitions for rulemaking relating to these amendments.

Discussion and Finding

Although amendments of this type affect substantive parts of the

Commission's regulations, the amendments themselves relate solely to matters of procedure. Requirements to keep records and make reports and regulations providing specific instructions as to where applications should be filed, how they should be signed and executed, the number of copies to be furnished, and the procedural steps which will be followed in connection with their review, do not have an effect on the environment. Like the amendments in Category 1., their function is to facilitate the orderly conduct of Commission business. Accordingly, the Commission finds that amendments of this type (Category 3.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 3. as a categorical exclusion, and directs that Category 3. be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

4. Entrance into or amendment, suspension, or termination of all or part of an agreement with a State pursuant to section 274 of the Atomic Energy Act of 1954, as amended, providing for assumption by the State and discontinuance by the Commission of certain regulatory authority of the Commission.

Discussion and Finding

Section 274 of the Atomic Energy Act of 1954, as amended (42 U.S.C. § 2021), provides a mechanism (a section 274b. Federal-State Agreement) which authorizes the Commission to discontinue and enables individual States to assume, as they become ready and willing to do so, certain defined areas of regulatory authority over source, byproduct and special nuclear material. In order to make sure that the health and safety of the public will continue to be adequately protected, section 274d. prescribes certain conditions which must be met before an agreement can be entered into.

> d. The Commission shall enter into an agreement under subsection b. of this section with any State if—
>
> (1) The Governor of that State certifies that the State has a program for the control of radiation hazards adequate to protect the public health and safety with respect to the materials within the State covered by the proposed agreement, and that the State desires to assume regulatory responsibility for such materials; and
>
> (2) the Commission finds that the State program is in accordance with the requirements of subsection o.* and in all other respects compatible with the Commission's program for regulation of such materials, and that the State program is adequate to protect the public health and safety with respect to the materials covered by the proposed agreement.

These requirements provide assurance that following the transfer of functions under the section 274b. agreement, the State will administer the existing regulatory program in a manner similar to the way in which it was previously administered by the NRC.

Under section 274j of the Act, the Commission retains certain residual powers which permit the Commission to terminate or suspend all or part of a State agreement and reassert its own licensing and regulatory authority if it finds that "* * * (1) such termination or suspension is required to protect the public health and safety, or (2) the State has not complied with one or more of the requirements of this section [section 274]." In aid of this residual authority, section 274j also provides that the Commission "* * * shall periodically review such agreements and actions taken by the States under the agreements to ensure compliance with the provisions of this section [section 274] * * *"

Under the statutory scheme provided in section 274, state regulatory actions do not become Federal actions for the purposes of NEPA by virture of the provisions of a Federal-State agreement. The agreement does not constitute a delegation or transfer of Federal authority to the States. Instead, the agreement specifies the conditions under which the States may exercise their own sovereign authority. Under the provisions of the agreement, the NRC's regulatory authority over source, byproduct and special nuclear material, conferred upon it by the Atomic Energy Act, is discontinued, thereby enabling the States, in the exercise of their inherent police powers to protect the public health and safety of their citizens, to assume regulatory authority over those materials. Thus, regulatory actions taken by states under an agreement are state actions and as such are not subject to NEPA which only applies to Federal actions.

Although execution of a Federal-State agreement is essential to shift regulatory control over source, byproduct and less-than-critical quantities of special nuclear material from the NRC to a state, the formal Federal action of entering into such an agreement has no immediate or measurable environmental impact. At the time of entrance into an agreement, information on the kind and number of State regulatory actions to be taken during the indeterminate period an agreement may remain in effect cannot be known and in consequence the environmental effects of those actions cannot be ascertained. Accordingly, no meaningful environmental impact statement or environmental assesament can be prepared. Under these circumstances, a categorical exclusion for actions of this type appears warranted.

In order to implement the provisions of the Uranium Mill Tailings Radiation Control Act of 1978, it will be necessary for the Commission and those Agreement States which wish to retain regulatory authority over uranium milling to amend the provisions of the section 274b agreements now in force. The purpose of these amendments is to bind the States, in accordance with the provisions of the Act, to carry out their responsibilities with respect to the regulation of mill tailings in a manner which will not only provide adequate protection of the public health and safety but which will also protect the environment from hazards associated with those materials. Among other things, the States will be required to prepare detailed environmental analyses before they license activities which result in the production of mill tailings.

Implementation of the amended agreements, as intended by the Congress, will have a significant and beneficial effect upon the environment. To acknowledge this, however, does not change the fact that the formal action of amending an agreement, in and of itself, is not only without any environmental impact, but given the nature of the statutory mandate, which requires that the terms of the agreements conform to the requirements of the Act, is essentially ministerial.

Accordingly, the Commission finds that entrance into or amendment, suspension, or termination of all or part of an agreement with a State pursuant to section 274 of the Atomic Energy Act of 1954, as amended, providing for assumption by the State and discontinuance by the Commission of certain regulatory authority of the Commission (Category 4.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 4. as a categorical exclusion and directs that Category 4. be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

5. Procurement of general equipment and supplies.

Discussion and Finding

Procurements of general equipment and supplies ensure that NRC personnel are able to efficiently perform their official responsibilities on a day to day basis. Although these procurements have an economic effect, they do not have a significant effect on the environment.

Accordingly, the Commission finds

*Section 274o., which was added by Pub. L. 95-604 (92 Stat. 3037), contains certain requirements relating to the licensing and regulation of mill tailings.

that procurements of general equipment and supplies (Category 5.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 5. as a categorical exclusion, and directs that Category 5. be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

6. Procurement of technical assistance, confirmatory research provided that the confirmatory research does not involve any significant construction impacts, and personal services relating to the safe operation and protection of commercial reactors, other facilities, and materials subject to NRC licensing and regulation.

Discussion and Finding

These actions involve scientific and engineering studies, assessments and analyses in areas relating to the safe operation and protection of commercial reactors, other facilities, and materials subject to regulation, licensing and inspection by the NRC. The actions do not include confirmatory research programs which entail physical construction of plants and facilities.

Although these activities have an economic effect, no significant effect on the environment is anticipated.

Accordingly, the Commission finds that procurement of technical assistance, confirmatory research which does not involve any significant construction impacts and personal services relating to the safe operation and protection of commercial reactors, other facilities, and materials subject to NRC licensing and regulation (Category 6.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 6. as a categorical exclusion, and directs that Category 6. be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

7. Personnel actions.

Discussion and Finding

Personnel actions refer to administrative actions affecting NRC employees or potential employees, including labor union activities and the hiring, promotion and separation of personnel. Although these activities have a social and economic effect, they do not have a significant effect on the environment.

Accordingly, the Commission finds that personnel actions (Category 7.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 7. as a categorical exclusion, and directs that Category 7. be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

8. Issuance, amendment, or renewal of operators' licenses pursuant to Part 55 of this chapter.

Discussion and Finding

Part 55 of the Commission's regulations prohibits persons from performing the functions of an operator or a senior operator at a licensed facility unless authorized to do so by a license issued by the Commission. Although issuance or denial of an operator's license may have a significant economic effect on the individual applicant, the action of the Commission in issuing, amending or renewing an operator's license in accordance with the procedures of 10 CFR Part 55 does not have an environmental effect. The environmental impact of the operation of a licensed facility by a licensed operator is fully considered in the environmental impact statement or environmental assessment prepared in connection with the licensing action authorizing operation of the facility. The formal action of certifying an operator does not authorize facility operation.

Accordingly, the Commission finds that issuance, amendment or renewal of operators' licenses pursuant to Part 55 of this chapter (Category 8.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 8. as a categorical exclusion, and directs that Category 8. be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

9. Issuance of an amendment to a permit or license for a reactor pursuant to Part 50 of this chapter which changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in Part 20 of this chapter, or which changes an inspection or a surveillance requirement, provided that (i) the amendment involves no significant hazards consideration, (ii) there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, and (iii) there is no significant increase in individual or cumulative occupational radiation exposure.

Discussion and Finding

Experience has indicated that amendments in this category either have no environmental impact or have an environmental impact that is insignificant. Changes which relate to the installation or use of a facility component located within a restricted area and which do not involve significant hazards considerations, significant changes in offsite effluents, or significant increases in occupational doses do not result in offsite effects that could have a significant impact on the human environment. Associated effects, if any, would be minimal and would be confined to limited access areas on site. Experience has also shown that amendments that change an inspection or surveillance requirement are usually of a procedural nature. The purpose of these changes is to incorporate accepted improvements in the installation or use of facility components or in inspection and surveillance which will facilitate the conduct of the licensee's business and insure the adequacy and timeliness of information reported to the Commission. As a result, such amendments will not lead to significant environmental impacts on the human environment either individually or cumulatively.

Accordingly, the Commission finds that license amendments of this type (Category 9.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 9. as a categorical exclusion, and directs that Category 9. be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

10. Issuance of an amendment to a permit or license pursuant to Parts 30, 31, 32, 33, 34, 35, 40, 50, 60, 61, 70, or 72 of this chapter which (i) changes surety, insurance and/or indemnity requirements, or (ii) changes recordkeeping, reporting, or administrative procedures or requirements.

Discussion and Finding

Issuance of an amendment to a permit or license to change surety, insurance and/or indemnity requirements or to change requirements relating to recordkeeping, reporting or other administrative procedures does not affect the scope or nature of the licensed activity. Although changes in surety, insurance and/or indemnity requirements affect the financial arrangements of licensees and have economic and social consequences, they do not alter the environmental impact of the licensed activities. Similarly, changes in recordkeeping and reporting requirements and other administrative procedures relating to the licensee's organization and management do not change the nature and the consequent environmental impact of the licensed activity. The function of these procedural and administrative changes is merely to facilitate the orderly conduct of the licensee's business and to insure that the information needed by the Commission to perform its regulatory functions is readily available. Accordingly, the Commission finds that

license amendments of this type (Category 10.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 10. as a categorical exclusion, and directs that Category 10. be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

11. Issuance of amendments to licenses for fuel cycle plants and radioactive waste disposal sites and amendments to materials licenses identified in § 51.60(b)(1) which are administrative, organizational, or procedural in nature, or which result in a change in process operations or equipment, provided that (i) there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, (ii) there is no significant increase in individual or cumulative occupational radiation exposure, (iii) there is no significant construction impact, and (iv) there is no significant increase in the potential for or consequences from radiological accidents.

Discussion and Finding

Some requests for amendments to these types of licenses are administrative, organizational or procedural in nature or involve changes in process operations and equipment which do not result in any significant adverse incremental impacts to the environment from the licensed activity. Implementation of these minor and routine types of changes do not significantly alter the previously evaluated environmental impacts associated with the licensed operation, taking into account construction impacts, types and amounts of effluents released by the operation, occupational exposure of employees, or potential accidents. Furthermore, these amendments do not affect the scope or nature of the licensed activity.

Accordingly, the Commission finds that this class of amendments to licenses for fuel cycle plants and radioactive waste disposal sites and to certain types of materials licenses (Category 11.) comprise a category of actions that do not individually or cumulatively have a significant effect on the human environment, designates Category 11. as a categorical exclusion, and directs that Category 11. to be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

12. Issuance of an amendment to a license pursuant to Parts 50, 60, 61, 70, 72, or 75 of this chapter relating solely to safeguards matters (i.e. protection against sabotage or loss or diversion of special nuclear material) or issuance of an approval of a safeguards plan submitted pursuant to Parts 50, 70, 72, and 73 of this chapter, provided that the amendment or approval does not involve any significant construction impacts. These amendments and approvals are confined to (i) organizational and procedural matters, (ii) modifications to systems used for security and/or materials accountability, (iii) administrative changes, and (iv) review and approval of transportation routes pursuant to 10 CFR 73.37.

Discussion and Finding

Amendments and approvals of this nature relate to the protection of nuclear materials against theft or diversion or to the protection of nuclear materials, facilities, and transportation activities against radiological sabotage. They are needed (1) to implement new safeguards regulations through incorporation of provisions into licenses and (2) to permit modifications to licensees' safeguards programs established under existing requirements. With the exception of amendments involving significant construction, they are confined to (i) organizational and procedural matters, (ii) modifications to systems used for security and/or materials accountability, (iii) administrative changes, and (iv) review and approval of transportation routes pursuant to 10 CFR 73.37. The issuance of license amendments relating to these matters in and of themselves will not cause any significant environmental impacts.

With regard to route approvals, the requirement in 10 CFR 73.37(b)(7) for advance NRC approval of transportation routes applies only to spent fuel shipments and was included in the Commission's regulations in order to provide additional assurance that shipments containing spent fuel would be adequately protected against loss, diversion or sabotage. Before approving a particular transportation route, the NRC first makes a determination, on the basis of independently acquired information, that (1) details have been worked out for swift response by local law enforcement agencies, if requested, and (2) concrete details for NRC contingency planning for the route are adequate. The NRC bases its route approvals on the following criteria: (1) Routes that permit more timely responses by local law enforcement agencies are preferred; (2) routes that avoid passage through tactically disadvantageous positions are preferred; (3) routes should have appropriate rest and refueling stops available; and (4) routes with advance safety design features such as divided highways and guard rails are preferred. In this manner the NRC is able to obtain or verify the adequacy of requisite safeguards information and to ensure that transportation will take place only over routes that have adequate safeguards.

The NRC distinguishes between safety matters and safeguards matters in its regulatory scheme. The requirement of NRC route approval is one of a number of elements of the physical protection system for spent fuel shipments and involves only a safeguards review. Safety matters are covered by 10 CFR Part 71 (packaging) and by Department of Transportation (DOT) regulations. Generally DOT is responsible for regulating safety in the transportation routing of radioactive materials. DOT did an environmental assessment in connection with the adoption of its rules authorizing the shipment by road throughout the Nation of all types of radioactive materials. DOT found in that environmental assessment that no environmental impact statement was required in connection with the adoption of the rules because the risks of highway transport are so low that the regulations authorizing such transport will have no significant adverse environmental impact.

DOT in its environmental assessment relied in part on two studies sponsored by the NRC: (1) Final Environmental Statement on the Transportation of Radioactive Materials by Air and Other Modes, NUREG–0170 (December 1977); (2) Transportation of Radionuclides in Urban Environs: Draft Environmental Assessment, NUREG/CR–0743; SAND 79–0369 (1980). The Commission finds from these studies and other available information, like DOT, that the transport of radioactive materials will not have a significant adverse environmental impact.

The Commission in NUREG–0170, a generic environmental impact statement, considered the environmental impacts of the transportation of radioactive materials, including the transportation of those materials over routes approved for safeguards purposes, and concluded that such impacts are small. This generic environmental impact statement set out the NRC's views of the present (1977) and projected (1985) environmental impact of the transportation of radioactive material and provided documentation for the NRC determination that the environmental impacts, radiological as well as non-radiological, of both the normal transportation of radioactive materials and of the risk and consequent environmental impacts attendant on accidents involving radioactive material shipments were sufficiently small that shipments by all modes of transport should be allowed to continue and that no immediate changes to NRC regulations were needed. This report also concluded that the risks of theft or sabotage resulting in any significant radiological release are sufficiently small to constitute no major adverse

impact on the environment. The Commission has examined the potential impacts set forth in NUREG–0170 and characterized as "small" and determined that they do not amount to a significant adverse impact.

NUREG/CR–0743 was developed to supplement NUREG–0170 by specifically studying the transport of nuclear materials through urban areas. That report concurred with the general conclusions in NUREG–0170 that neither accident-free transport nor the overall expected effects of accidents pose a significant hazard to urban populations. However, that study, although it contained a high degree of uncertainty as to the potential consequences of sabotage of spent fuel shipments, did suggest that sabotage has the potential for producing serious radiological consequences in areas of high population density.

In response to this uncertainty the NRC and the Department of Energy (DOE) sponsored separate coordinated experimental programs. While the results of these studies are still undergoing review, they appear to support the conclusion that transport of radioactive materials will not have significant adverse environmental impacts. The Commission believes that the available information, including the review of these two studies to date, provides sufficient certainty to conclude at this time that the transportation of radioactive materials in accord with NRC and DOT regulations will not have a significant adverse impact on the environment. In this connection, *see City of New York, et al.* v. *U.S. Department of Transportation, et al.*, 715 F.2d 732 (2d Cir., 1983) in which the U.S. Court of Appeals for the Second Circuit upheld DOT's determination that promulgation of DOT regulation HM–164 governing the highway transportation of radioactive materials was not an action requiring preparation of an environmental impact statement. Appeal dismissed and certiorari denied, February 27, 1984, No. 83–770, U.S. Supreme Court, October term 1983. The Commission notes, however, that if special circumstances are shown to exist in connection with a particular shipment an environmental assessment or an environmental impact statement may be prepared for that shipment, and that as further review continues, this conclusion may be modified.

Accordingly, the Commission finds that license amendments and approvals of this type (Category 12.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 12. as a categorical exclusion, and directs that Category 12. be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

13. Approval of package designs for packages to be used for the transportation of licensed materials.

Discussion and Finding

Certificates of compliance approving package designs for packages to be used in the transportation of radioactive materials are issued upon demonstration that the package designs meet applicable performance standards contained in Part 71 of the Commission's regulations. Although it is expected that packages manufactured in accordance with approved designs will be used to transport radioactive materials, the certificates of compliance do not and cannot authorize the actual transportation of those materials. At the time a certificate approving a particular package design is issued, there is no specific information available on the number of packages that will be manufactured or the frequency of use. Since the Commission finds from other available material that the transportation of radioactive material in accord with applicable regulations will not have a significant adverse impact on the environment, the approval of package designs in accord with those regulations similarly can have no significant adverse environmental impact.

The Commission previously considered the impacts of the actual transportation of radioactive materials in packages meeting the performance standards of 10 CFR Part 71 in a generic environmental impact statement (Final Environmental Statement on the Transportation of Radioactive Materials by Air and Other Modes, NUREG–0170, December 1977) and concluded that such impacts are small. This generic environmental impact statement was prepared to aid the NRC in reevaluating its regulations for the air transportation of radioactive materials, including packaging and related ground transportation. Although the statement was directed at air transportation, packaging standards and other transportation modes—land transport and water transport—were also considered. The statement set out the NRC's views on the present (1977) and projected (1985) environmental impact of the transportation of radioactive materials. The statement also provided documentation for the NRC determination that the environmental impacts, radiological as well as non-radiological, of normal transportation of radioactive materials, including the transportation of those materials in packages for which the Commission had issued design approvals, and the risks and consequent environmental impacts attendant on accidents involving radioactive material shipments were sufficiently small that shipments by all modes of transport should be allowed to continue. On the basis of this generic environmental impact statement, the NRC concluded that no immediate changes to its regulations, including those portions of the regulations relating to the certification of package designs, were needed. The Commission has examined the potential impacts set forth in NUREG–0170 and characterized them as "small" and determined that they do not amount to a significant adverse impact.

NUREG/CR–0743, Transportation of Radionuclides in Urban Environs: Draft Environmental Assessment (1980) was developed to supplement NUREG–0170 by specifically studying the transport of nuclear materials through urban areas. That report concurred with the general conclusions in NUREG–0170 that neither accident-free transport nor the overall expected effects of accidents pose a significant hazard to urban populations. However, that study, although it contained a high degree of uncertainty as to the potential consequences of sabotage of spent fuel shipments, did suggest that sabotage has the potential for producing serious radiological consequences in areas of high population density.

In response to this uncertainty the NRC and the Department of Energy (DOE) sponsored separate coordinated experimental programs. While the results of these studies are still undergoing review, they appear to support the conclusion that transport of radioactive materials will not have significant adverse environmental impacts. The Commission believes that the available information, including the review of these two studies to date, provides sufficient certainty to conclude at this time that the transportation of radioactive materials in accord with applicable regulations will not have a significant adverse impact on the environment. The Commission notes that as further review continues, this conclusion may be modified.

Accordingly, the Commission finds that approvals of package designs for packages to be used for the transportation of licensed materials (Category 13.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 13. as a categorical exclusion, and directs that Category 13. be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

14. Issuance, amendment, or renewal of materials licenses issued pursuant to 10 CFR Parts 30, 31, 32, 33, 34, 35, 40, or 70 authorizing the following types of activities:

(i) Distribution of radioactive material and devices or products containing radioactive material to general licensees and to persons exempt from licensing.

(ii) Distribution of radiopharmaceuticals, generators, reagent kits and/or sealed sources to persons licensed pursuant to 10 CFR 35.14 and 35.100.

(iii) Nuclear pharmacies.

(iv) Medical and veterinary.

(v) Use of radioactive materials for research and development and for educational purposes.

(vi) Industrial radiography.

(vii) Irradiators.

(viii) Use of sealed sources and use of gauging devices, analytical instruments and other devices containing sealed sources.

(ix) Use of uranium as shielding material in containers or devices

(x) Possession of radioactive material incident to performing services such as installation, maintenance, leak tests and calibration.

(xi) Use of sealed sources and/or radioactive tracers in well-logging procedures.

(xii) Acceptance of packaged radioactive wastes from others for transfer to licensed land burial facilities provided the interim storage period for any package does not exceed 180 days and the total possession limit for all packages held in interim storage at the same time does not exceed 50 curies.

(xiii) Manufacturing or processing of source, byproduct, or special nuclear materials for distribution to other licensees, except processing of source material for extraction of rare earth and other metals.

(xiv) Nuclear laundries.

(xv) Possession, manufacturing, processing, shipment, testing, or other use of depleted uranium military munitions.

(xvi) Any use of source, byproduct, or special nuclear material not listed above which involves quantities and forms of source, byproduct, or special nuclear material similar to those listed in sections (i)–(xv) of Category 14.

Discussion and Findings

Previously, the Commission's attention to environmental review requirements for materials licensing actions has focused largely on activities in the uranium fuel cycle. In this revision to 10 CFR Part 51, other types of materials licenses are accorded additional attention. Although some types of materials licensing actions have not been the subject of an in-depth environmental review, the NRC and its predecessor agency, the Atomic Energy Commission, have had over thirty years experience in licensing and regulating these materials licensees. Based on this experience, the NRC believes that these activities, individually or cumulatively, have not resulted in any significant impact on the environment. Absolute confirmation that none of these licensing actions would ever have any significant environmental impact could be obtained only by in-depth reviews of each of thousands of licensing actions each year. The Commission does not believe that the huge expenditure of resources that would be required would be justified and believes that the environment would be better protected if NRC's resources were devoted to the environmental analyses called for under §§ 51.20(b) and 51.21 of this subpart for the types of actions which experience suggests have real potential to cause significant environmental problems. Under the revised regulations, the NRC staff may prepare an environmental impact statement or an environmental assessment, as appropriate, for any licensing actions covered by a categorical exclusion should special circumstances come to its attention that would warrant such action.

(i) Distribution of radioactive material and devices or products containing radioactive material to general licensees and to persons exempt from licensing.

These licenses authorize persons to distribute radioactive materials and devices such as density gauges, level gauges, and other gauging devices to persons who are general licensees and to distribute products containing radioactive material such as watches, electron tubes, or smoke detectors to persons who are exempt from licensing. These licenses for distribution do not authorize processing or use of radioactive materials. There are no effluent releases or personnel exposures associated with the licensed activities. These distribution licenses presuppose ultimate use or possession of the radioactive materials under a general license or exemption established by regulation, which regulation, under § 51.21, will require an environmental assessment addressing the environmental impacts of the generally licensed or exempted activities of the recipients of the materials. The radioactive material, devices and products that may be distributed pursuant to these licenses must meet the specific standards and requirements in the NRC regulations. At the time of issuance of the regulations authorizing distribution, the determination was made that subsequent exempt or generally licensed use or possession of the materials would not constitute a risk to the public health and safety.

(ii) Distribution of radiopharmaceuticals, generators, reagent kits and/or sealed sources to persons licensed pursuant to 10 CFR 35.14 and 35.100.

These licenses authorize persons to distribute radiopharmaceuticals, generators, reagent kits and/or sealed sources to NRC's Group medical licensees. These licenses for distribution do not authorize possession, use or processing of radioactive materials. There are no effluent releases or personnel exposures associated with the licensed activities.

(iii) Nuclear pharmacies.

Nuclear pharmacies purchase prepared radiopharmaceuticals, radioisotope generators and reagent kits from manufacturers. They elute the generators and distribute the eluate as a prepared radiopharmaceutical or compound the eluate with reagent kits to make prepared radiopharmaceuticals. They dispense and distribute prepared radiopharmaceuticals to medical licensees in unit-dose or multi-dose forms. If the services of a nuclear pharmacy are not used, the medical licensee performs these functions in his own nuclear medicine laboratory. Due to the short half-life of medically useful isotopes, the radioactive wastes that nuclear pharmacies generate may be decayed to background levels in storage. Releases in effluents may be estimated at 5% of maximum permissible values. Due to the soft gamma emission of most medically useful isotopes and the use of personnel shielding devices, exposure to personnel may be conservatively estimated at 25% of the maximum permissible dose.

(iv) Medical and veterinary.

NRC issues licenses to hospitals and to physicians authorizing use of radioactive materials in the diagnosis and treatment of patients. These licensed activities may include such activities as: receipt of radioactive material, preparation of radiopharmaceuticals from Mo-99/Tc-99m generators and reagent kits, administration of unsealed radiopharmaceuticals to patients for diagnostic or therapeutic purposes, the use of sealed sources for brachytherapy (i.e., radiation delivered from a short distance) and/or teletherapy (i.e., radiation delivered from a long distance), use of sealed sources contained in devices implanted in patients (e.g., nuclear-powered pacemakers), laboratory use of unsealed sources for performance of diagnostic tests or for tracer studies for research purposes, use of source material for shielding (e.g., as a component of a teletherapy unit or a linear accelerator), and the disposal of the authorized materials by holding for decay or by transfer to authorized recipients.

For the purposes of this discussion, medical licenses also include similar activities conducted by veterinarians for diagnosis or treatment of animals and laboratory use of unsealed sources for diagnostic tests as performed by clinical laboratories.

The environmental impact of these

licensed activities is insignificant. In light of 10 CFR 20.107, radiation exposures of patients are not considered. The environmental impacts would be: occupational exposures estimated at less than 10% of the applicable limits; non-occupational exposures of members of the public who may have contact with these patients are generally minimal; releases to air and water or to sanitary sewerage (primarily as patient excreta) are of small quantity, or if of larger quantities, are short-lived. Effluent releases with the exception noted in 10 CFR 20.303(d) are estimated at less than 10% of the applicable limits.

(v) Use of radioactive materials for research and development and for educational purposes.

These licenses authorize persons (e.g., academic institutions, industrial firms, and government agencies) to use sealed and/or unsealed sources of byproduct, source and special nuclear material for activities such as research and development (10 CFR 30.4(q)), educational purposes, classroom demonstrations, animal tracer studies, and tracer studies of materials and compounds. (Licenses to construct or operate nuclear research reactors are not materials licenses and therefore are not within the scope of this categorical exclusion.) This categorical exclusion does not encompass (a) processing or manufacturing, (b) performance of field studies in which licensed material is deliberately released directly into the environment for purposes of the study, or (c) use of radioactive tracers in field flood studies involving secondary and tertiary oil and gas recovery. As specified in § 51.60(b)(1)(vi), applicants seeking licenses authorizing the use of tracers in field flood studies involving secondary and tertiary oil and gas recovery are required to submit environmental reports. In the case of other field studies in which licensed material is deliberately released directly into the environment for purposes of the study, environmental reports will be requested on a case-by-case basis as needed.

A typical facility is designed to minimize release of effluents to the environment. Remote handling equipment, personnel protective clothing, and shielding materials are standard equipment to minimize personnel exposures. A day-to-day radiation safety program provides for monitoring of personnel exposures, contamination levels, radiation levels, and effluent releases. Personnel exposures and effluent releases are estimated at less than 10 per cent of the limits of 10 CFR Part 20.

(vi) Industrial radiography.

Gamma radiation sources (primarily iridium-192 and cobalt-60) are used for non-destructive testing of materials throughout the United States. The sources used are metallic and are encapsulated in a stainless steel capsule. Therefore, during ordinary use it is not expected that there will be releases of radioactive material to the environment. The radiation exposure during routine use of sources in industrial radiography is well within NRC limits for occupational exposure. The average exposure per individual radiographer is less than 0.4 rem per year, which is less than 10% of the permissible exposure.

(vii) Irradiators.

These devices are used for a variety of purposes in research and industry to expose products to large amounts of radiation. Typical uses include sterilization or microbiological reduction in medical and pharmaceutical supplies and insect eradication through sterile male release programs. Irradiators usually contain from a few hundred curies to megacuries of radioactive material, principally cobalt 60. The radioactive material is contained in sealed sources. Product irradiation occurs within areas to which access is controlled and which are shielded to protect both operating personnel and the environment.

Personnel exposures during use of these devices are less than 5% of the limits in 10 CFR Part 20. There are no effluent releases resulting from operation of irradiators.

(viii) Use of sealed sources and use of gauging devices, analytical instruments and other devices containing sealed sources.

Sealed sources used by licensees are usually singularly or doubly encapsulated depending on activity in stainless steel. Therefore, in ordinary use it is not expected that the use of sealed sources will result in the release of radioactive material to the environment. Sealed sources used by licensees are usually required to undergo rigorous prototype testing to ensure that the likelihood of a substantial release of radioactive material to the environment during abnormal use of sealed sources is unlikely.

Gauging devices used to measure thickness, density, and level of materials contain sealed sources, usually cesium-137 and strontium-90, which are encapsulated so that there is no leakage during use. The devices provide shielding such that radiation levels external to the devices are on the order of a few milliroentgens per hour. Other devices include gas chromatographs with millicurie quantities of nickel-63 or hydrogen-3, analytical devices such as X-ray fluorescence analyzers with sealed sources containing a variety of radioisotopes, instrument calibration devices containing millicurie to curie quantities of cesium-137 and cobalt-60, and soil-density gauges which contain millicurie quantities of cesium-137 and americium-241 neutron sources.

Personnel exposure from use of these devices is less than 5% of the limits in 10 CFR Part 20. There are no effluents associated with the use of devices containing sealed sources.

(ix) Use of uranium as shielding material in containers or devices.

These licenses for possession and use of uranium for shielding are a non-nuclear use of radioactive materials. Because of its high density, uranium is excellent as shielding material. Depleted uranium has very low specific activity and the corresponding low radiation levels emitted make it very unlikely that any individual will receive a radiation dose in excess of 5% of maximum permissible dose specified in Part 20. In addition, because of its physical and chemical properties, there should be no release of radioactive material to the environment during normal use of depleted uranium as shielding and very limited release during abnormal conditions.

(x) Possession of radioactive material incident to performing services such as installation, maintenance, leak tests and calibration.

These licenses only authorize the possession of radioactive material incident to performing services either at the customer's facility or at the licensee's facility. Generally the activity involves the use of sealed sources only. Since service licenses involved very little actual possession and use of radioactive material, personnel exposure from performing the services should be less than 5% of the limits in 10 CFR Part 20 and there should be no effluent releases.

(xi) Use of sealed sources and/or radioactive tracers in well-logging procedures.

During the past 20 years in which the NRC and its predecessor agency, the AEC, have been regulating the use of sealed radioactive sources and short-lived radioactive tracers in well logging, there have been approximately 89 incidents in which well-logging sources have been forced to be abandoned in wells. A risk analysis prepared by the NRC staff shows only a small radiological risk to the public health and safety from the potential release of radioactive material due to long term corrosion or damage from drilling into sources that have been abandoned. In addition, routine safety measures, such as those described below, also protect against significant environmental impacts from well-logging activities.

Well drilling permits require that gas and oil wells be cased to below potable water aquifers to prevent cross contamination from brine, oil and gas

normally associated with wells. This requirement also serves to preclude contamination of potable water aquifers when radioactive materials are used in these cased wells. In the event a source becomes irretrievable during a well-logging operation, safety requirements are imposed to minimize the escape of radioactivity from the source and the surrounding areas. These requirements include: (1) Sealing the source in place with a cement plug to immobilize it and to preclude abrasion and corrosion; (2) setting a deflection device (whipstock) at the top of the cement plug to deflect a drill away from the general area of the source in the event of an inadvertent future drilling; (3) mounting a permanent identification plaque at the surface of the well to alert anyone planning to enter the well to the existence of a source downhole; and (4) requiring notification to be placed in pertinent land records maintained by State oil and gas regulatory agencies to alert against redrilling the well. In addition, the construction of the source itself minimizes the possibility of releases and migration of radioactive material. Source capsules are always doubly encapsulated and fabricated of stainless steel or other corrosion resistant material. The radioactive material is in the form of a very low solubility compound. The sources are enclosed in a logging tool made of steel which provides additional protection.

The radioactive materials used as tracers in well logging have short half-lives and the quantities involved are small—in the low millicurie range. The use of these tracers does not present any environmental impact because of the small quantities which decay to innocuous radioactivity levels in short periods of time.

(xii) Acceptance of packaged radioactive wastes from others for transfer to licensed land burial facilities provided the interim storage period for any package does not exceed 180 days and the total possession limit for all packages held in interim storage at the same time does not exceed 50 curies.

These licenses authorize the acceptance of radioactive waste in packages that meet all governmental regulations for transport of radioactive materials. The packaged radioactive material is stored temporarily until a sufficient number of packages is accumulated for shipment to licensed land burial sites.

In general, these activities are analogous to the transport carried out by common and contract carriers, which are exempt from NRC license requirements. Packages are not permitted to be opened although over-packaging may be carried out in the event defective packaging is received. There are no routine releases of radioactive effluents. Safety requirements for the storage facility include protection against unauthorized entry, fire resistant buildings and packages, fire detection and suppression capability, radiation monitoring equipment and operating and emergency procedures. By limiting the total radioactivity in storage at any one time to a maximum of 50 curies and by limiting the storage period for any package to a maximum of 180 days, the chances of significant releases of radioactivity or excess exposure of personnel in the event of accident conditions, such as a fire, are minimal.

(xiii) Manufacturing or processing of source, byproduct, or special nuclear materials for distribution to other licensees, except processing of source material for extraction of rare earth and other metals.

Manufacturing or processing of source, byproduct, or special nuclear materials for distribution to other licensees consists of approximately 234 NRC licensees at the present time. Under these licenses, persons manufacture radiopharmaceuticals, labeled compounds for research purposes and sealed sources for use in gauging and analytical equipment. Other licensees in this category use and handle radioactive materials in solid form to manufacture sealed sources, e.g., radiography devices, or use and handle already sealed sources by incorporating the sources into devices used for gauging purposes.

In 1978, licensees in this category had an average dose of 0.45 rem for persons with measurable exposure and an average dose of 0.21 rem for all persons monitored. The collective dose for this category of licensees was 3,280 man-rems. The potential impact, therefore, is very small, less than one calculated health effect. Ninety-eight percent of the facilities had releases in air of less than one percent of the maximum permissible concentrations in 10 CFR Part 20. The largest release reported was approximately 12 percent of the maximum permissible concentrations. Releases of liquid wastes were well within the limits in NRC regulations.

Operations where source material is processed for extraction of rare earth or other metals may involve generation of large volumes of waste containing low levels of radioactive material. The storage and ultimate disposal of this waste may have significant environmental impact. Therefore, these types of operations are not listed as a categorical exclusion.

(xiv) Nuclear laundries.

Nuclear laundries receive slightly contaminated clothing from nuclear facilities and provide decontamination services. The "clean" garments are then returned to the customer. As of August 31, 1981, there were four NRC licensees in this category. The quantities of radioactive material involved are small, usually a few millicuries of radioactive material. In 1978, three of the four licensed laundries reported an average dose of 0.22 rem for persons with measurable exposure and a collective dose of 1 rem. The small amount of activity used by those licensees is disposed of in accordance with NRC regulations.

(xv) Possession, manufacturing, processing, shipment, testing, or other use of depleted uranium military munitions.

Possession, manufacturing, processing, shipment, testing or other use of depleted uranium munitions, e.g., bullets and other projectiles, includes about 10 licenses held by U.S. military organizations and less than 10 licensees involved with the manufacturing process. The military tests involve the use of low specific activity depleted uranium (3.6×10^{-7} curies/gram) as metal alloy penetrators (rods) which vary in weight from a few grams to less than 10 kilograms. These rods are propelled at high velocities against metal targets such as armor plate. Testing of these munitions is carried out at remote desert locations on military reservations, in constructed enclosures, or over deep ocean waters. Any materials released to the environment are of low radioactive content, are highly dispersed, and are of chemical and physical form which is not readily incorporated into flora or fauna. Thus, radioactive releases to the environment which could affect human, animal or plant life from testing at any of the locations are negligible and occupational exposures from handling depleted uranium are so low that personnel monitoring is not required. Additionally, since the penetrators tested do not explode, cratering or other defacing of the environment is not experienced. The military also transports and stores depleted uranium munitions for war-readiness posture. Because the munitions are transported and stored in sealed containers as solid metal in nondispersible form, there is negligible environmental impact associated with such transportation and storage.

Manufacturers of depleted uranium munitions are also included here for the sake of completeness, although manufacturers are excluded in section (xiii) of Category 14.

(xvi) Any use of source, byproduct, or special nuclear material not listed above which involves quantities and forms of source, byproduct, or special nuclear material similar to those listed in sections (i)–(xv) of Category 14.

It has been the Commission's experience in the past that additional

environmentally insignificant materials licensing actions occasionally arise. These cases involve uses of source, byproduct or special nuclear material in quantities and form similar to those categorically excluded in sections (i)–(xv) of Category 14, and, therefore, have insignificant environmental impacts. By categorically excluding actions of this type, the Commission will avoid the unnecessary expenditure of scarce resources in preparing environmental assessments for those few environmentally insignificant cases not separately identified as the subject of a specific categorical exclusion. The Commission anticipates that considerably less than 1% of its licensing actions in the nuclear materials area would fit within this category.

Accordingly, the Commission finds that issuance, amendment, and renewal of licenses described above (Category 14.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 14, as a categorical exclusion, and directs that Category 14 be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

15. Issuance, amendment or renewal of licenses for import of nuclear facilities and materials pursuant to Part 110 of this chapter, except for import of spent power reactor fuel.

Discussion and Finding

Import licenses issued pursuant to 10 CFR Part 110 merely authorize import into the United States and do not authorize any person to possess, use, or transfer the facilities or materials within the United States. Also, import licenses do not authorize transportation of imported facilities and materials within the United States. An exception has been made in the categorical exclusion for imports of spent power reactor fuel. In the Final Environmental Statement on the Transportation of Radioactive Materials by Air and Other Modes (NUREG–0170, December 1977) the NRC staff examined the environmental impact of the transportation of imports from the time a shipment first arrives in the United States until it reaches its ultimate destination and concluded that the environmental impact of such transportation was negligible.

Accordingly, the Commission finds that issuance, amendment or renewal of licenses for import of nuclear facilities and materials pursuant to Part 110 of this chapter, except for import of spent power reactor fuel (Category 15.), comprises a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 15, as a categorical exclusion and directs that Category 15 be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

16. Issuance or amendment of guides for the implementation of regulations in this chapter, and issuance or amendment of other informational and procedural documents that do not impose any legal requirements.

Discussion and Finding

Regulatory guides are issued (and sometimes revised) to explain the NRC staff's position regarding an acceptable method of implementation of regulations. Compliance with their provisions is not required. Since regulatory guides do not modify existing regulations and are not enforceable by themselves they can neither increase nor decrease any environmental impact which an existing regulation may have. Other informational and procedural documents covered by this exclusion have no environmental impact for the same reason.

Accordingly, the Commission finds that issuance or amendment of guides for the implementation of regulations in this chapter and issuance or revision of other similar informational and procedural documents (Category 16.) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 16, as a categorical exclusion, and directs that Category 16, be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

17. Issuance of an amendment to a permit or license pursuant to Parts 30, 40, 50, or 70 of this chapter which deletes any limiting condition of operation or monitoring requirement based on or applicable to any matter subject to the provisions of the Federal Water Pollution Control Act.

Discussion and Finding

Pursuant to the Federal Water Pollution Control Act (FWPCA), the Environmental Protection Agency has exclusive responsibility for developing, setting and enforcing nonradiological effluent limitations and water quality standards. These effluent limitations and water quality standards apply to a wide variety of pollutants. However, they do not apply to source, byproduct and special nuclear material. On June 1, 1976, the U.S. Supreme Court held that source, byproduct and special nuclear materials do not fall within the class of pollutants which are subject to regulation under the Federal Water Pollution Control Act. (*Train* v. *Colorado PIRG*, 426 U.S. 1 at 25.)

In the past, in order to make sure that NRC licensees were conducting their activities in an environmentally responsible manner, the Nuclear Regulatory Commission, like its predecessor agency, the Atomic Energy Commission, included conditions relating to water quality matters covered by the FWPCA in NRC permits and licenses. Following an extensive and careful examination of the legislative history of section 511(c)(2) of the Federal Water Pollution Control Act (33 U.S.C. 1371(c)(2)), the Atomic Safety and Licensing Appeal Board held in two decisions that the Environmental Protection Agency has exclusive responsibility for the substantive regulation of nonradiological pollutant discharges where an NPDES permit is in effect, and described the respective roles of EPA and NRC in the following terms:

> The first is that the spread of Federal responsibility for water quality standards and pollution control among the various licensing agencies, which resulted from the reading given NEPA by the *Calvert Cliffs* court, has been curtailed. That responsibility is shifted to EPA as its exclsive province. The second is that the mandate to acquire "expertise" in developing, setting, and enforcing effluent limitations and water quality standards is also given to EPA; federal licensing agencies are to rely on that agency when such matters are involved and not develop duplicate expertise on their own. Third, those agencies are not to "second-guess" EPA by undertaking independent analyses and setting their own standards in this area. And, finally, given the pointed Congressional comments cited, NRC, as statutory successor to the AEC, is unmistakably bound by those strictures.
>
> To be sure, in deciding whether to license specific projects, each agency must continue to weigh any resulting degradation of water quality in its NEPA cost-benefit balance. Section 511(c)(2) does not change this obligation. Rather, its intendment is to limit those agencies' NEPA roles to that balancing, leaving the substantive regulation of water pollution in EPA's hands.
>
> ALAB–515 (1978) In the Matter of Tennessee Valley Authority (Yellow Creek Nuclear Plant, Units 1 and 2) 8 NRC 702 at 712–713, as quoted in ALAB–589 (1979) In the Matter of Carolina Power and Light Company (H. B. Robinson, Unit No. 2) 10 NRC 557 at 561.

The law established in these Appeal Board decisions is clear. The NRC no longer has a role setting conditions relating to nonradiological discharges of pollutants into aquatic bodies or establishing requirements for aquatic monitoring where an NPDES permit is in effect. Instead, EPA, and those states to whom permitting authority has been delegated, have exclusive responsibility for regulating nonradiological pollutant discharges through the NPDES permit system. The NRC's role in the water quality area is limited to regulating radiological discharges into aquatic bodies and NEPA matters such as weighing aquatic impacts in the NEPA analysis which NRC is required to make

before reaching a major Federal licensing decision.

Under certain provisions of the Federal Water Pollution Control Act, such as sections 401(a)(2) and 401(d), NRC licenses, like licenses issued by other Federal agencies, become subject to conditions deemed imposed by the Federal Water Pollution Control Act as a matter of law. In recognition of these statutory requirements and to make clear that NRC licenses are issued subject to these conditions, whether stated in the licenses or not, the Commission is amending § 50.54 of its regulations.

In order to comply with existing law and to assure that its regulatory responsibilities are carried out in a consistent manner in accordance with these revised regulations, the NRC is continuing its ongoing process of amending all outstanding NRC licenses and permits to delete from those licenses and permits any limiting conditions of operation or monitoring requirements pertaining to nonradiological discharges of pollutants subject to the provisions of the Federal Water Pollution Control Act. These amendments will not affect EPA's independent responsibility to administer and enforce or the obligation of an NRC licensee or permittee to comply with the requirements of the Federal Water Pollution Control Act.

The Commission finds that license amendments of this type (Category 17) comprise a category of actions which do not individually or cumulatively have a significant effect on the human environment because these impacts have been addressed under the appropriate provisions of the Federal Water Pollution Control Act. Accordingly, the Commission designates Category 17 as a categorical exclusion, and directs that Category 17 be listed in § 51.22(c) as a categorical exclusion.

Category of Actions

18. Issuance of amendments or orders authorizing licensees of production or utilization facilities to resume operation, provided the basis for the authorization rests solely on a determination or redetermination by the Commission that applicable emergency planning requirements are met.

Discussion and Finding

The Commission published its final emergency planning rule amending 10 CFR Parts 50 and 70 on August 19, 1980 (45 FR 55402). As part of its deliberations on the rule, the Commission evaluated the environmental impact of the proposed changes and provided the public an opportunity to comment on the draft environmental assessment and draft negative declaration. See 45 FR 3913 at 3915, January 21, 1980, and 45 FR 55413-55415, August 19, 1980. After considering the public comments, the Commission determined that the changes in emergency planning requirements would not have a significant effect on the human environment. Accordingly, an environmental impact statement was not prepared. A key assumption in the Commission's decision not to prepare an environmental impact statement for the emergency planning rule was that shutdowns of nuclear power plants as a result of actions taken under the rule are expected to be infrequent and of short duration. Therefore, it is very unlikely that the resumption of operation of a particular facility would have a significant effect on the human environment. Moreover, the Commission retains discretion to require an environmental assessment or an environmental impact statement in special circumstances.

Accordingly, the Commission finds that issuance of amendments or orders authorizing licensees of production or utilization facilities to resume operation, provided the basis for the authorization rests solely on a determination or redetermination by the Commission that applicable emergency planning requirements are met (Category 18) comprises a category of actions which do not individually or cumulatively have a significant effect on the human environment, designates Category 18, as a categorical exclusion and directs that Category 18, be listed in § 51.22(c) as a categorical exclusion.

CEQ Review and Approval

On October 19, 1982, the General Counsel of CEQ advised the Executive Legal Director of NRC that the Council had completed its review of NRC's draft final NEPA procedures (revised 10 CFR Part 51) as provided by 40 CFR 1507.3(a), and had determined, based on that review, that NRC's NEPA procedures address all of the sections of the CEQ regulations required to be addressed by 40 CFR 1507.3(b) and that the NRC procedures may take effect after they are published in final form in the **Federal Register**.

Paperwork Reduction Act Review

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget approval number 3150-0021. (49FR24512)

List of Subjects in 10 CFR Part 51

Administrative practice and procedure, Environmental impact statement, Nuclear materials, Nuclear power plants and reactors, Reporting and recordkeeping requirements

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the National Environmental Policy Act of 1969, as amended, and 5 U.S.C. 552 and 553, the following revision of 10 CFR Part 51 and related conforming amendments to 10 CFR Parts 2, 30, 40, 50, 61, 70, 72 and 110 are published as a document subject to codification. Amendments to all parts except revised 10 CFR Part 51 issued pursuant to citations of authority presently codified.

49 FR 10922
Published 3/23/84

10 CFR Part 51

Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions and Related Conforming Amendments

Correction

In FR Doc. 84-6324, beginning on page 9352, in the issue of Monday, March 12, 1984, make the following corrections:

1. On page 9388, in the third column, in § 51.51, paragraph (b) consists of Table S-3 only; therefore the three asterisks should be removed since there was no introductory text omitted.

2. On page 9390, in the second column, in § 51.52, paragraph (c) consists of Table S-4 only; therefore the three asterisks should be removed since there was no introductory text omitted.

49 FR 19623
Published 5/9/84
Effective 5/9/84

Information Collection Requirements; Display of OMB Control Numbers

See Part 0 Statements of Consideration

49 FR 24512
Published 6/14/84
Effective 6/7/84

Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions and Related Conforming Amendments

See Part 2 Statements of Consideration

49 FR 34658
Published 8/31/84

Waste Confidence Decision

See Part 50 Statements of Consideration

49 FR 34680
Published 8/31/84
Effective 11/29/84

Requirements for Licensee Actions Regarding the Disposition of Spent Fuel Upon Expiration of Reactor Operating Licenses

See Part 50 Statements of Consideration

49 FR 42693
Published 10/24/84

Waste Confidence Decision

See Part 50 Statements of Consideration

49 FR 42693
Published 10/24/84

Requirements For Licensee Actions Regarding the Disposition of Spent Fuel Upon Expiration of Reactor Operating Licenses

See Part 50 Statements of Consideration

➤ **50 FR 21036**
Published 5/22/85
Effective 5/22/85

Update of NRC Addresses and Copying Charges for Environmental Documents; Minor Correcting Amendments

See Part 1 Statements of Consideration

PART 53

CRITERIA AND PROCEDURES FOR DETERMINING THE ADEQUACY OF AVAILABLE SPENT NUCLEAR FUEL STORAGE CAPACITY

Subpart A—General Provisions

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53.5 Information collection requirements.
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53.27 Initial determination.
53.28 Final determination.
53.29 Notice of issuance of a final determination.
53.30 Criteria for a Commission determination.

Authority: Secs. 53, 57, 62, 63, 65, 69, 81, 103, 104, 161, 68 Stat. 930, 932, 933, 934, 935, 936, 937, 948, as amended (42 U.S.C. 2073, 2077, 2092, 2093, 2095, 2099, 2111, 2133, 2134, 2201); secs. 201, 209, as amended, 88 Stat. 1242, 1248, as amended (42 U.S.C. 5841, 5849); secs. 132, 135, 96 Stat. 2230, 2232 (42 U.S.C. 10152, 10155)

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); §§ 53.11, 53.12, 53.13, 53.14, and 53.16 are issued under sec. 161(o), 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

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Subpart A—General Provisions

§ 53.1 Purpose and scope.

(a) The regulations in this part establish procedures and criteria for making the determination required by section 135(b) of the Nuclear Waste Policy Act of 1982 (96 Stat. 2201 and 2233) that a person owning or operating a civilian nuclear power reactor cannot reasonably provide adequate spent nuclear fuel storage capacity at the reactor site, or at the site of any other reactor operated by that person, when needed to ensure the continued orderly operation of the reactor, and that such person is diligently pursuing licensed alternatives to the use of Federal storage capacity for the storage of spent nuclear fuel expected to be generated by such person in the future.

(b) The regulations in this part apply to any person owning or operating a civilian nuclear power reactor who requests a Commission determination.

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§ 53.2 Definitions.

As used in this part:

Civilian nuclear power reactor means—a civilian nuclear power plant required to be licensed as a utilization facility under Sections 103 or 104(b) of the Atomic Energy Act of 1954.

Commission means—the Nuclear Regulatory Commission or its duly authorized representatives.

Full core reserve means—the capability to store all of the fuel in a single reactor core at one time at an on-site storage facility.

Spent nuclear fuel means—fuel that has been withdrawn from a nuclear power reactor following irradiation, the constituent elements of which have not been separated by reprocessing.

§ 53.3 Communications.

Except where otherwise specified, each communication and report concerning the regulations in this part should be addressed to the Document Control Desk, U.S. Nuclear Regulatory Commission, Attention: Executive Director for Operations, Washington, DC 20555, or may be delivered in person to the Commission's Document Control Desk between the hours of 8:15 a.m. and 4:00 p.m. (e.s.t.), at 7920 Norfolk Avenue, Bethesda, MD.

§ 53.4 Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than written interpretation by the General Counsel will be considered binding on the Commission.

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§ 53.5 Information collection requirements.

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act of 1980 (42 U.S.C. 3501 et seq.). OMB has approved the information collection requirements contained in this part under control number 3150-0126.

(b) The approved information collection requirements in this part appear in §§ 53.11, 53.12, 53.13, and 53.14.

§ 53.6 Specific exemptions.

The Commission may, upon application of any interested person or upon its own initiative, grant such exemption from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

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Subpart B—Request for a Commission Determination

§ 53.11 Filing and distribution of a determination request.

(a) The person submitting a request for a Commission determination must file a signed original and 9 copies of the request with the Commission at the address specified in § 53.3, with a copy also provided to the appropriate Regional Administrator at the address specified in Appendix D to Part 20 of this chapter. The request must be signed by the person requesting the determination or the person's authorized representative under oath or affirmation.

(b) Any request for a Commission determination under this part, must be filed no later than June 30, 1989. An exception to this requirement may be granted if the Commission determines that:

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(1) The request is likely to be processed and the determination made prior to January 1, 1990; and

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(2) The person requesting the determination has shown good cause for the failure to file on time.

(c) Upon receipt of a request for a determination, the Secretary of the Commission will cause to be published in the **Federal Register** a notice of receipt of the request and the opportunity for a 30-day public comment

period on the request. A copy of the request will be made available for public inspection in the Commission's Public Document Room, 1717 H Street NW., Washington, DC, and in the Local Public Document Room for the reactor site. The Secretary of the Commission will also transmit a copy of the request to the Office of Civilian Radioactive Waste Management of the U.S. Department of Energy.

(d) Fees applicable to a request for a Commission determination under this part will be determined in accordance with the procedures set forth for special projects under category 12 of § 170.31 of this chapter.

(e) In the event that the Department of Energy has entered into contracts for the full amount of spent fuel authorized for Federal interim storage under section 135(a) of the Nuclear Waste Policy Act, the Commission may suspend the processing or acceptance of requests for determinations until additional interim Federal storage capacity is authorized.

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§ 53.12 Contents of request: General information.

A request for a Commission determination under this part must include the following general information:

(a) Name and address of the person owning or generating the spent nuclear fuel for which the determination is sought.

(b) The civilian nuclear power reactor or reactor site for which the request is being made.

(c) Explanation of why the determination described in § 53.1(a) is needed, including—

(1) A complete history of fueling/refueling cycles for each reactor at the reactor site from beginning of operation to date of request;

(2) Projected refueling cycles for each reactor from date of request through operating life of plant, including anticipated maintenance schedules;

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(3) A schedule of all actions taken to provide storage for spent nuclear fuel generated by each reactor from the beginning of operation to date of request, with a projection of the amount of capacity still available in terms of number of assemblies and metric tons of uranium (MTU) of spent nuclear fuel and time remaining until loss of full core reserve discharge capability;

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(4) A schedule of all actions planned or currently underway to provide additional storage, with the projected amount of additional capacity to be provided by these actions;

(5) The amount and geographical location of any spent nuclear fuel stored offsite, and the anticipated duration of offsite storage;

(6) The anticipated date of loss of full core reserve;

(7) An estimate of the amount of spent nuclear fuel and the schedule for its storage for which Federal interim storage would be necessary to prevent the loss of full core reserve;

(8) For a request related to a multi-reactor site, the necessity of maintaining reserve storage capability of more than one full core reserve; and

(9) Any other information which the Commission should consider in making its determination.

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§ 53.13 Contents of request: Alternatives.

(a) The request must include, for each alternative spent nuclear fuel storage technology listed in paragraph (c) of this section, an analysis of any substantial technical, economic, regulatory, or public health and safety constraints that would make the implementation of any of the alternatives unreasonable, including factors such as:

(1) Structural limitations;

(2) The extent to which implementation would disrupt operation of the reactor;

(3) Unavailability of necessary materials or equipment;

(4) Inability to meet the Commission's regulatory requirements due to factors beyond the licensee's control and despite the licensee's good faith efforts;

(5) Local or State laws and regulatory actions, including preexisting agreements, that limit or prevent the timely expansion or addition of storage capacity or transshipment;

(6) Unusual licensing delays;

(7) The time required for licensing, design, and construction;

(8) Extraordinary costs of implementation, including the costs of providing the necessary additional capacity, and the time for which the capacity is needed; and

(9) Radiation exposure considerations.

(b) The request must include, for each alternative spent nuclear fuel storage technology listed in paragraph (c) of this section, detailed information on the actions that the person requesting the determination has taken to date to avoid or reduce the need for Federal interim storage, including—

(1) The timing and description of each license application and study done by or for the person; and

(2) The amount of time that the person estimates would be required to develop, have approved, and implement any alternatives that are still under consideration.

(c) For the purposes of this part, spent nuclear fuel storage alternatives include—

(1) Expansion of existing storage facilities, including high-density fuel storage racks or fuel rod compaction;

(2) Construction of new or additional spent nuclear fuel storage facilities at the site of any civilian nuclear power reactor operated by such person;

(3) Acquisition of modular or mobile spent nuclear fuel storage equipment, including spent nuclear fuel storage casks, for use at the site of any civilian nuclear power reactor operated by such person;

(4) Transshipment of spent nuclear fuel to the site of another civilian nuclear power reactor within the same utility system; and

(5) Such other technologies for spent nuclear fuel storage as may be approved by the Commission for use at the sites of civilian nuclear power reactors.

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§ 53.14 Additional information.

(a) The Commission, the EDO, or designee, as appropriate, may require additional information from a person making a request for Commission determination under this part concerning any portion of the request.

(b) The Commission, the EDO, or designee, may deny a request for a Commission determination under this part if the person making the request fails to respond to a request for additional information under paragraph (a) of this section within thirty (30) days from the date of the request for additional information, or such other time as the Commission, Executive Director, or designee, may specify. This denial shall be without prejudice to the right of the person making the request to file another request for a Commission determination under this part.

§ 53.15 Withdrawal of a determination request.

(a) A person may withdraw a request for a Commission determination under this part without prejudice at any time prior to the issuance of an initial determination under § 53.27.

(b) The Secretary of the Commission will cause to be published in the Federal Register a notice of the withdrawal of a request for a Commission determination under this part.

§ 53.16 Elimination of repetition.

In any request under this part, the person making the request may incorporate by reference information contained in a previous application, statement, or report filed with the Commission provided that these references are clear and specific.

Subpart C—Issuance of a Commission Determination

§ 53.27 Initial determination.

(a) Not later than four (4) months after the receipt of a request for a Commission determination under this part from a person generating or owning spent nuclear fuel, the Executive Director for Operations, or designee, shall make an initial determination of whether—

(1) Adequate storage capacity to ensure the continued orderly operation of the civilian nuclear power reactor at which the spent nuclear fuel is generated cannot reasonably be provided by the person owning or operating the reactor at that site, or at the site of any other civilian nuclear power reactor operated by the person, and that the capacity cannot be made available in a timely manner through any method described in § 53.13(c) despite the licensee's diligent and good faith efforts to pursue such methods; and

(2) That person is diligently pursuing licensed alternatives to the use of Federal storage capacity for the storage of spent nuclear fuel expected to be generated by the person in the future, so as to ensure the availability of additional storage capacity as soon as possible by means of the spent fuel storage alternatives listed in § 53.13(c).

(b) In making an initial determination under this section, the Executive Director for Operations, or designee, shall be guided by the criteria set forth in § 53.30.

(c) An initial determination under this section shall be in writing and shall contain a full explanation of the facts upon which the determination is based and the reasons for granting or denying the request. An affirmative determination shall specify the amount of spent nuclear fuel that cannot reasonably be stored on site and the schedule for when Federal storage is needed, and may contain conditions on which the determination is dependent. A copy of the initial determination shall be sent to the person who filed the request.

(d) If a request for a determination is based on circumstances that are too remote and speculative to allow an informed determination, the Commission, the EDO, or designee, may deny the request.

§ 53.28 Final determination.

(a) An initial determination under § 53.27 shall be filed with the Office of the Secretary of the Commission. Such initial determination shall constitute the final determination of the Commission thirty (30) days after its issuance, unless the Commission decides to review the initial determination under paragraph (b) of this section.

(b) Within thirty days after the Executive Director for Operations, or designee, makes an initial determination, the Commission may, on its own motion, review the determination.

(c) The Commission may, at its discretion, extend the time for review of an initial determination under paragraph (b) of this section; provided, however, that if the Commission has not completed its review or issued a final determination within six (6) months of the filing of a request under this part, the initial determination of the Executive Director for Operations, or his or her designee, shall constitute the final determination of the Commission.

(d) No petition or other request for Commission review of an initial determination under § 53.27 will be entertained by the Commission.

§ 53.29 Notice of issuance of a final determination.

(a) Upon the issuance of a final Commission determination or after the expiration of the time for Commission review of an initial determination under § 53.28, which constitutes a final determination, the Secretary of the Commission will notify, in writing, the person making the request, and the Office of Civilian Radioactive Waste Management of the Department of Energy of the final determination.

(b) The Secretary of the Commission will cause to be published in the **Federal Register** a notice of the issuance of the final determination.

(c) The Secretary of the Commission will make a copy of the final determination available for public inspection in the Commission's Public Document Room, 1717 H Street NW., Washington, DC, and in the Local Public Document Room for the reactor site.

§ 53.30 Criteria for a Commission determination.

(a) In making the determination required by § 53.27(a)(1), the Commission shall consider the existence of technical, economic, regulatory, or health and safety factors that would make the implementation of any alternative to Federal interim storage of spent nuclear fuel set forth in § 53.13(c) unreasonable, such as—

(1) Suitability of the reactor site for implementation of an alternative, including consideration of structural integrity.

(2) Inability to meet the Commission's regulatory requirements for implementation and licensing of an alternative due to factors beyond the licensee's control and despite the licensee's diligent and good faith efforts.

(3) Inability to obtain necessary materials or equipment in a timely manner.

(4) Modifications that would result in the excessive reduction of code design margins.

(5) Extraordinary costs of implementation that are clearly unreasonable in view of such factors as the amount of additional storage capacity needed, the time for which additional storage capacity is needed, or the cost of Federal interim storage.

(6) Unforeseen or unavoidable delays in the licensing or implementation of an alternative due to factors beyond the licensee's control and despite the licensee's diligent and good faith efforts.

(7) Legal impediments to the implementation of an alternative, such as State or local laws or regulatory actions, including preexisting agreements, pertaining to matters within the jurisdiction of those levels of government, which are valid and enforceable or, though not valid, cannot reasonably be invalidated or enforcement enjoined in a timely manner.

(8) Occupational or off-site radiation exposures or on-site construction hazards that are clearly unreasonable in view of the amount of additional storage capacity needed or the time for which additional storage capacity is needed.

(b) Solely for the purpose of making the determination required by § 53.27(a)(1), the Commission shall ensure the maintenance of a full core reserve at the site of the civilian nuclear power reactor for which the request is being made.

(c) If the person requesting the determination demonstrates, and the Commission finds, that the maintenance of a single full core reserve at the reactor site is either inadequate or not necessary for continued orderly operation of the reactor, the Commission may make an exception to the provision of paragraph (b) of this section.

(d) In making the determination required by § 53.27(a)(2), the Commission will consider whether the person submitting the request has demonstrated diligent and timely efforts to initiate activities reasonably calculated to implement alternatives to Federal interim storage of spent fuel on a schedule commensurate with the need to support the continued orderly operation of the reactor, including—

(1) Diligent and good faith efforts to prepare and file existing license application(s) for spent nuclear fuel storage alternative(s) as early as

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possible so as to provide sufficient time to allow for design, licensing, and implementation; and

(2) Subsequent developments beyond the control of the person submitting the request that (i) have changed the original estimate of when and how much additional storage capacity will be needed or (ii) would prevent the timely implementation of one or more alternatives; and

(3) The timely preparation and implementation of a spent nuclear fuel storage program or plan that evaluates the feasibility of alternatives to Federal storage of spent nuclear fuel, taking into account technical, economic, regulatory, and public health and safety factors and that includes the prompt development of feasible alternatives to Federal storage.

PART 53

CRITERIA AND PROCEDURES FOR DETERMINING THE ADEQUACY OF AVAILABLE SPENT NUCLEAR FUEL STORAGE CAPACITY

≫ 48 FR 19382
Published 4/29/83
Submit comments by 6/28/83.

Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received before this date.

10 CFR Part 53

Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The proposed rule would establish procedures and criteria for determining whether a person owning and operating a civilian nuclear power reactor cannot reasonably provide adequate spent nuclear fuel storage capacity. This determination is necessary before the Department of Energy may enter into contractual arrangements with the person generating or owning spent nuclear fuel to provide interim Federal storage capacity for limited amounts of spent nuclear fuel. The proposed rule is necessary to meet NRC responsibilities under Section 135(b) and (g) of the Nuclear Waste Policy Act of 1982.

DATE: Submit comments by June 28, 1983. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received before this date.

ADDRESS: Submit written comments to the Secretary of the Commission: U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Copies of comments received and the regulatory analysis may be examined at the NRC Public Document Room, 1717 H Street NW., Washington, D.C.

FOR FURTHER INFORMATION CONTACT: F. X. Cameron, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone: (301) 443–5997.

SUPPLEMENTARY INFORMATION:

Background

The Nuclear Waste Policy Act of 1982 (Pub. L. 97–425, January 7, 1983, 96 Stat. 2201 *et seq.*, 42 U.S.C. 10101 *et seq.*) establishes a comprehensive framework for the disposal of spent nuclear fuel and high-level radioactive waste generated by domestic civilian nuclear power reactors. The Act establishes procedures and schedules for the selection and development of geologic repositories for spent nuclear fuel and high-level radioactive waste, provides a mechanism for financing the cost of this disposal, and sets forth other provisions related to nuclear waste research, storage, and disposal.

Subtitle B of Title I of the Act establishes a program for the interim storage of spent nuclear fuel while the repository for ultimate disposal is selected and developed. The primary responsibility for providing interim storage of spent nuclear fuel rests with the persons owning and operating civilian nuclear power reactors. This responsibility is to be implemented through the effective use of existing storage facilities at the reactor sites and by the timely addition of new on-site storage capacity where practical. The Federal Government has the responsibility to encourage and expedite the provision of interim storage capacity by the reactor owners. In addition, the Federal Government has the responsibility to provide up to 1900 metric tons of storage capacity for spent nuclear fuel from reactors that cannot reasonably provide adequate storage capacity on site.

Section 135(g) of the Act directs the Commission to establish criteria and procedures for making the determination that a person owning and operating a civilian nuclear power reactor cannot reasonably provide adequate spent nuclear fuel storage capacity at the reactor site, or at the site of any other reactor operated by that person, when needed to ensure the continued orderly operation of the reactor. Section 135(b) of the Act provides that the Department of Energy shall enter into a contract under Section 136(a) with a person who owns or generates spent nuclear fuel that would provide for Federal ownership, transport, and storage of spent fuel, only if the Commission makes two affirmative determinations:

1. A person owning and operating a civilian nuclear power reactor cannot reasonably provide adequate spent nuclear fuel storage capacity at the reactor site, or the site of any other reactor operated by that person, when needed to ensure the continued orderly operation of the reactor.

Section 135(g) directs the Commission to establish criteria and procedures for making this determination by rule, and provides the following guidance:

a. The criteria must ensure the maintenance of a full core reserve storage capability at the reactor site, unless the Commission determines that maintenance of such capability is not necessary for the continued orderly operation of the reactor; and

b. The criteria must identify the feasibility of reasonably providing adequate spent fuel storage capacity, taking into account economic, technical, regulatory, and public health and safety factors, through the use of the following:

- Expansion of existing storage facilities, including high-density fuel storage racks, or fuel rod compaction;
- Transshipment of spent nuclear fuel to another civilian nuclear power reactor within the same utility system;
- Construction of additional spent nuclear fuel pool capacity; or
- Such other technologies as may be approved by the Commission.

2. The person owning and operating the reactor is "diligently pursuing licensed alternatives to the use of Federal storage capacity" for the storage of spent nuclear fuel expected to be generated in the future. These alternatives include the following:

- Expansion of storage facilities at any reactor site operated by such person;
- Construction of new or additional storage facilities at any reactor site operated by such person;

• Acquisition of modular or mobile spent nuclear fuel storage equipment, including spent nuclear fuel storage casks for use at any reactor site operated by such person;

• Transshipment to another civilian nuclear power reactor owned by such person.

In developing the criteria and procedures contained in proposed Part 53, the NRC has been cognizant of the Congressional concern that the interim Federal storage program be used to provide only a limited amount of storage capacity on an exceptional-use basis to utilities that are unable to provide their own storage capacity in time to prevent shutting down the reactor. While the availability of Federal storage capacity must not be foreclosed by overly strict criteria and standards, the person requesting the determination must clearly demonstrate that Federal storage is the only reasonably feasible option remaining.

The Proposed Action

1. Subpart A—General Provisions.

Sections 53.1 through 53.5 address a number of general issues, including purpose and scope of the rule, definitions, communications with the Commission, and interpretations of the rule. The rule applies to all persons owning and operating domestic civilian nuclear power reactors who submit a request for a Commission determination under Section 135(b) of the Nuclear Waste Policy Act. This determination consists of a decision by the Commission as to whether adequate spent nuclear fuel storage capacity to ensure the continued orderly operation of a particular reactor cannot reasonably be provided in timely manner by the person owning and operating that reactor.

2. Subpart B—Request for a Commission Determination.

Subpart B specifies the procedures that must be followed and the information that must be submitted by a person seeking a Commission determination. The proposed rule requires the submission of information on spent nuclear fuel storage capacity and need, feasible storage alternatives, and evidence that the person requesting the determination has been diligently pursuing alternatives. This information will enable the Commission to determine—

• Whether additional capacity is needed, in what amount, and in what time frame, and

• Whether it is practical for the person making the request to implement alternatives to Federal interim storage in light of technical, economic, regulatory, and public health and safety constraints.

Subpart B also sets forth procedures related to the filing and distribution of a request for a Commission determination. These procedures provide for publication of notice of receipt of a request in the Federal Register to inform the public that Commission action on the request is pending.

No request for a Commission determination will be formally accepted prior to the effective date of the rule. However, persons with an immediate need for a determination may submit a request upon publication of the proposed rule in order to allow the staff to begin consideration of the request. However, the formal date of receipt of the request shall be deemed to be the effective date of the rule.

The making of a Commission determination under section 135(b) of the Nuclear Waste Policy Act is not a "proceeding * * * for the granting, suspending, revoking, or amending of any license or construction permit, or application to transfer control * * *" under Section 189a. of The Atomic Energy Act. Accordingly, there is no opportunity for a hearing in connection with a request for a Commission determination. Similarly, there is no right to petition the Commission for review of the Executive Director for Operations initial determination under subpart C of the proposed rule. Of course, if a licensee seeks permission to implement a licensed alternative to Federal interim storage of spent fuel, an opportunity for a hearing would be available in that proceeding. Although some of the same facts might be in issue, a Commission determination under Section 135(b) would be entirely separate from the decision of the presiding officer in a licensing proceeding. The proposed rule should not be construed as expressing any Commission position on the feasibility of a particular storage technology. The application of a specific technology will require Commission evaluation and approval. For example, in the case of the full scale use of fuel rod compaction, the Commission would review issues related to criticality, heat transfer, accident evaluation, and structural and materials considerations.

3. Subpart C—Issuance of a Commission Determination.

Subpart C establishes the criteria and standards that the Commission will use to make the statutory determinations—

—That adequate storage capacity cannot reasonably be provided in a timely manner; and

—That the person requesting the determination has been diligently pursuing licensed alternatives to the use of Federal storage capacity.

In making the determination on the ability of the requesting person to reasonably provide adequate capacity, the Commission will consider any technical, economic, regulatory, or public health and safety factors that would constrain implementation of alternatives to Federal storage. Although it is not possible to anticipate all the constraints that could affect the ability of an individual reactor owner to implement a spent fuel storage alternative, these constraints could include such factors as structural limitations; inability to meet the Commission's regulatory requirements due to factors beyond the licensee's control; the state of the technology; the extent to which implementation would disrupt operation of the reactor; unavailability of necessary storage or shipping equipment; local or state ordinances limiting the expansion or addition of storage capacity or transhipment; unusual licensing delays; the time required for licensing, design, and construction; extraordinary cost to consumers; and offsite and occupational radiation exposure considerations. Depending on the particular facts, a single factor or a combination of factors could make implementation of a given alternative impractical. While it is not anticipated that either occpational or offsite public health and safety will be a determining factor as long as the applicable Commission regulations are met, the criteria do allow for those unusual circumstances where radiation exposure is unreasonably out of proportion to the amount of additional storage capacity needed, or the time period for which it is needed.

In determing whether the requesting person has been diligently pursuing licensed alternatives to the Federal storage of spent nuclear fuel, the Commission will consider whether the person has initiated timely action either to provide the necessary storage capacity or to evaluate the feasibility of providing the necessary storage capacity. Although license applications are one example of these actions, the preparation of reports or studies that thoroughly investigate the technical feasibility, costs, and public health and safety aspects of alternative storage options will also be considered by the Commission.

Section 135(g) of the Act requires the Commission's criteria to ensure the maintenance of full core reserve storage capability at the site of the reactor unless the Commission determines that such capability is not necessary for the continued orderly operation of the reactor. Commission policy has been to permit continued operation at licensed reactor facilities where less than a full core reserve is maintained because such operation does not constitute an undue risk to the health and safety of the public. While a full core reserve capability is not an NRC safety requirement, the Commission has recognized that the maintenance of a

full core reserve would be a prudent management practice on the part of the reactor operator. It would be needed to prevent extended reactor outages in the event a core must be discharged in order to inspect the reactor pressure vessel and to conduct routine and unscheduled maintenance. Although a reactor can be quickly and safely shut down with fuel in core, without full core reserve, if the core had to be discharged, the reactor would have to remain shut down while arrangements for shipping and storage were made and excuted. During this time, the utility would have to purchase supplemental power at substantial additional cost to its customers. A recent Department of Energy study on spent nuclear fuel storage estimated that if full core reserve were needed and not available, it would result in 50–90 days of reactor shut down and loss of power.[1] The costs to a utility's customers of an unscheduled outage is often in excess of $500,000 per day in replacement power costs alone. In addition to the potentially high costs of operating without full core reserve, a statistical evaluation of full core removal from nuclear power plants indicates that a full core discharge would be expected to occur about once every six years at any given nuclear power plant, and could occur as often as once every three years.[2]

The Commission interprets "continued, orderly operation" to mean the avoidance of extended reactor shut down due to lack of storage capacity. The Commission considers the likelihood of the need for full core reserve, and the resulting costs from not having full core reserve discharge capabilty, to be inconsistent with continued orderly operation. Therefore, the Commission has made a generic finding that, for the purposes of a determination under this part, full core reserve is necessary for the continued orderly operation of the reactor. The legislativie history of the Nuclear Waste Policy Act suggests that the maintenance of full core reserve is closely related to the concept of continued, orderly operation. As first introduced in the Senate, the bill provided for a determination of whether adequate storage capacity could be provided to ensure continued, orderly operation "through the maintenance of a full core reserve capability." S. 1662, 97 Cong., 2d Sess., section 302(a), 128 Cong. Rec. S4139, S4141 (daily ed., April 28, 1982). This language was later changed to that now found in the Waste Act which gives the Commission the flexibility to examine whether full core reserve is needed for continued, orderly operation. In this context, the Commission believes that a generic finding that full core reserve is necessary for continued, orderly operation is consistent with Congressional intent.

Where two or more reactors share a particular site, the maintenance of a single full core reserve capability will normally be sufficient to ensure continued orderly operation. However, the person requesting the determination has the opportunity to demonstrate that special circumstances require the maintenance of more than a full core reserve at the site. These special circumstances could include the inability to utilize available storage space for some reason, for example, incompatibility between the storage pool and the fuel type.

Because a license is not involved and the determination is based primarily on technical findings, Subpart C provides that the Executive Director for Operations, or his designee, shall make the initial determination. However, this determination is subject to Commission review, at the Commission's disicretion. The final determination must be made within 6 months of the receipt of the request.

Commissioner Ahearne's Additional Views.

The criteria are to ensure maintenance of a full core reserve "unless the Commission determines that maintenance of such capability is not necessary for the continued orderly operation of such reactor."[3]

As the Commission stated in response to a Congressional question concerning a similar provision in an earlier version of the waste legislation, "The regulatory interests of NRC—primarily, protection of the health and safety of the public—are not significantly involved in such a determination."[4] This continues to be the case. The NRC has very little to say on this issue. If the Congress had required us to find that full core reserve was necessary, I do not believe we could. However, I agree we have no basis for determining that full core reserve capability "is *not* necessary for the contiuning orderly operation of [reactors]," and thus agree with the generic determination on this issue which is contained in this rulemaking. (emphasis added)

Commissioner Asselstine's Additional Views.

Commissioner Asselstine would appreciate comment on whether a short public comment period would be appropriate after the Commission publishes a notice of receipt of a determination request in the Federal Register as required in § 53.11(c).

Environmental Impact: Negative Declaration

The proposed rule, if adopted, would not result in any activity that significantly affects the quality of the human environment. The Commission has determined that, under the National Environmental Policy Act and the criteria in 10 CFR Part 51, an environmental impact statement is not required for this proposed regulation.

The environmental impact appraisal forming the basis for this determination is contained in the draft regulatory analysis prepared for this proposed regulation. The availability of the draft regulatory analysis is noted below.

Paperwork Reduction Act Statement

The information collection requirements contained in this proposed rule will affect fewer than 10 respondents. Therefore, Office of Management and Budget clearance is not required pursuant to the Paperwork Reduction Act of 1980 (42 U.S.C. 3501 *et seq.*).

Regulatory Analysis

The Commission has prepared a draft regulatory analysis of the proposed regulation. The analysis identifies and examines the costs and benefits of the proposed regulation and its alternatives. The draft analysis is available for inspection, and copying for a fee at the NRC Public Document Room, 1717 H Street NW., Washington, DC 20555.

Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule, if adopted, will not have a significant economic impact on a substantial number of small entities. The proposed addition of 10 CFR Part 53 applies solely to certain owners and operators of civilian nuclear power reactors, none of which can be considered small entities.

List of Subjects in 10 CFR Part 53

Administrative practice and procedure, High-level waste, Nuclear materials, Nuclear power plants and reactors, Reporting requirements, Spent nuclear fuel, Waste treatment and disposal.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the Nuclear Waste Policy of 1982, and 5 U.S.C. 553, notice is hereby given that adoption of a new 10

[1] U.S. Department of Energy, Spent Fuel Storage Requirements (DOE/RL–82–1, 1982).

[2] Pickard, Lowe, and Garrick, Full Core Removal Study (1979).

[3] Nuclear Waste Policy Act of 1982, section 136(g).

[4] Letter from C. Kammerer to Senator Hart dated November 23, 1981 (question 8 concerning Section 302(a) of S. 1662).

READEX FICHE

CFR Part 53 is contemplated.

1. A new Part 53 is added to 10 CFR Chapter I to read as follows:

PART 53—CRITERIA AND PROCEDURES FOR DETERMINING ADEQUACY OF AVAILABLE SPENT NUCLEAR FUEL STORAGE CAPACITY

Subpart A—General Provisions

Sec.

53.1 Purpose and scope.
53.2 Definitions.
53.3 Communications.
53.4 Interpretations.
53.5 Information collection requirements.

Subpart B—Request for a Commission Determination

53.11 Filing and distribution of a determination request.
53.12 Contents of a request: General information.
53.13 Contents of a request: Specific information.
53.14 Additional information.
53.15 Withdrawal of a determination request.
53.16 Elimination of repetition.

Subpart C—Issuance of a Commission Determination

53.27 Initial determination.
53.28 Final determination.
53.29 Notice of issuance of a final determination.
53.30 Criteria for a Commission determination.

Authority: Secs. 53, 57, 62, 63, 65, 69, 81, 183, 104, 161, 68 Stat. 930, 932, 933, 934, 935, 936, 937, 948, as amended (42 U.S.C. 2073, 2077, 2092, 2093, 2095, 2099, 2111, 2133, 2134, 2201); secs. 201, 209, as amended, 88 Stat. 1242, 1248 as amended, (42 U.S.C. 5841, 5849); secs. 132, 135, 96 Stat. 2230, 2232 (42 U.S.C. 10152, 10155). For the purposes of Sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 53.11, 53.12, 53.13, 53.14, and 53.16 are issued under Sec. 161(o), 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

Subpart A—General Provisions

§ 53.1 Purpose and scope.

(a) The regulations in this part establish procedures and criteria for making the determination required by Section 135(b) of the Nuclear Waste Policy Act of 1982 (96 Stat. 2201 and 2233) that a person owning and operating a civilian nuclear power reactor cannot reasonably provide adequate spent nuclear fuel storage capacity at the reactor site, or at the site of any other reactor operated by that person, when needed to ensure the continued orderly operation of the reactor, and that such person is diligently pursuing licensed alternatives to the use of Federal storage capacity for the storage of spent nuclear fuel expected to be generated by such person in the future.

(b) The regulations in this part apply to any person owning and operating a civilian nuclear power reactor who requests a Commission determination.

§ 53.2 Definitions.

As used in this part:

"Civilian nuclear power reactor," means—a civilian nuclear power plant required to be licensed under Section 103 or 104(b) of the Atomic Energy Act of 1954.

"Commission" means—the Nuclear Regulatory Commission or its duly authorized representative.

"Full core reserve" means—the capability to store all of the fuel in a single reactor core at one time at an on-site storage facility.

"Spent nuclear fuel" means—fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing.

§ 53.3 Communications.

Except where otherwise specified, each communication and report concerning the regulations in this part should be addressed to the Document Control Desk, U.S. Nuclear Regulatory Commission, Attention: Executive Director for Operations, Washington, DC 20555, or may be delivered in person to the Commission's Document Control Desk between the hours of 8:00 a.m. and 5:00 p.m. (local time), at 7920 Norfolk Avenue, Bethesda, MD.

§ 53.4 Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than written interpretation by the General Counsel will be considered binding on the Commission.

§ 53.5 Information collection requirements.

The information collection requirements contained in this part will affect fewer than 10 respondents. Therefore, Office of Management and Budget clearance is not required pursuant to the Paperwork Reduction Act of 1980 (42 U.S.C. 3501 *et seq.*).

Subpart B—Request For a Commission Determination

§ 53.11 Filing and distribution of a determination request.

(a) The person submitting a request for a Commission determination shall file a signed original and 20 copies of the request with the Commission at the address specified in § 53.3, with a copy also provided to the appropriate Regional Administrator at the address specified in Appendix D to Part 20 of this chapter. The request must be signed by the person requesting the determination or the person's authorized representative under oath or affirmation.

(b) Any request for a Commission determination under this part, must be filed no later than June 30, 1989. A request for a Commission determination must be filed no earlier than *(effective date of the rule)* or two years before the person making the request anticipates loss of full core reserve, whichever is later.

(c) Upon receipt of a request for a determination, the Commission will publish notice of receipt of the request in the Federal Register. The Commission will also make the request available for public inspection in the Commission's Public Document Room, 1717 H Street, NW., Washington, DC, and in the Local Public Document Room for the reactor site.

(d) Fees applicable to a request for a Commission determination under this part are set forth in Part 170 of this chapter.

§ 53.12 Contents of request—General information.

A request for a Commission determination under this part must include the following general information:

(a) Name and address of the person owning or generating the spent nuclear fuel for which the determination is sought.

(b) The civilain nuclear power reactor or reactor site for which the request is being made.

(c) Explanation of why the determination under § 53.1(a) is needed, including a discussion of such factors as—

(1) The type and capacity of existing and planned spent nuclear fuel storage facilities at the reactor site for the next 10 years and for the remainder of the license term;

(2) The existence of any contractual arrangement for the storage of spent nuclear fuel away from the reactor site;

(3) The number and location of spent nuclear fuel assemblies presently in storage at the reactor site, and the number of additional spent nuclear fuel assemblies that will require storage during the term of the license;

(4) The amount of storage capacity necessary to maintain full core discharge capability for the reactor;

(5) The anticipated date of reactor shutdown due to the lack of necessary storage capacity under the following conditions:

(i) If full core discharge capability is maintained; and

(ii) If full core discharge capability is not maintained;

(6) An estimate of the amount of spent nuclear fuel and schedule, for which interim Federal storage would be necessary under conditions in (c)(5)(i) and (ii) of this section.

§ 53.13 Contents of a request: Specific information.

The request must include the following information on each alternative spent nuclear fuel disposal technology that may eliminate or decrease the need for Federal interim spent nuclear fuel storage set forth in paragraph (c) of this section:

(a) An analysis of any substantial technical, economic, regulatory, or public health and safety constraints that would prevent the use of any of the alternatives set forth in paragraph (c) of this section. These constraints could include factors such as structural limitations; inability to meet the Commission's regulatory requirements due to factors beyond the licensee's control and despite the licensee's good faith efforts; the state-of-the-technology; the extent to which implementation would disrupt operation of the reactor; unavailability of necessary storage or shipping equipment; local or State laws limiting or preventing the timely expansion or addition of storage capacity or transshipment; unusual licensing delays; the time required for licensing, design, and construction; extraordinary costs to consumers; offsite and occupational radiation exposure considerations; and

(b) Detailed information on the actions taken and planned by the person making the request to pursue each of the alternatives set forth in paragraph (c) of this section including references to license applications, research studies or reports conducted or sponsored by the person seeking the determination, the timing of all such actions, and other relevant material;

(c) Spent nuclear fuel storage alternatives—

(1) Expansion of existing storage facilities including high-density fuel storage racks or fuel rod compaction;

(2) Construction of new or additional spent nuclear fuel storage facilities at the site of any civilian nuclear power reactor operated by such person;

(3) Acquisition of modular or mobile spent nuclear fuel storage equipment, including spent nuclear fuel storage casks, for use at the site of any civilian nuclear power reactor operated by such person; and

(4) Transshipment of spent nuclear fuel to the site of another civilian nuclear power reactor owned by such person; and

(5) Any other technologies that have been approved by the Commission.

§ 53.14 Additional information.

(a) The Commission may require additional information from a person making a request for Commission determination under this part concerning any portion of the request.

(b) The Executive Director for Operations, or his designee, may deny a request for a Commission determination under this part if the person making the request fails to respond to a request for additional information under paragraph (a) of this section within thirty (30) days from the date of the request for additional information, or such other time as the Executive Director may specify. This denial shall be without prejudice to the right of the person making the request to file another request for a Commission determination under this part.

§ 53.15 Withdrawal of a determination request.

(a) The Commission or the Executive Director for Operations, as appropriate, may permit a person to withdraw a request for a Commission determination under this part without prejudice at any time prior to the issuance of an initial determination under § 53.27.

(b) The Secretary of the Commission will cause to be published in the Federal Register a notice of the withdrawal of a request for a Commission determination under this part.

§ 53.16 Elimination of repetition.

In any request under this part, the person making the request may incorporate by reference information contained in a previous application, statement, or report filed with the Commission provided that these references are clear and specific.

Subpart C—Issuance of a Commission Determination

§ 53.27 Initial determination.

(a) Not later than four (4) months after the receipt of a request for a Commission determination under this part from a person generating or owning spent nuclear fuel, the Executive Director for Operations, or his designee, shall make an initial determination of whether—

(1) Adequate storage capacity to ensure the continued orderly operation of the civilian nuclear power reactor at which the spent nuclear fuel is generated cannot reasonably be provided by the person owning and operating the reactor at that site, or at the site of any other civilian nuclear power reactor operated by the person, and that the capacity cannot be made available in a timely manner through any method described in paragraph (a)(2) of this section despite the licensee's diligent and good faith efforts to pursue such methods, and

(2) Such person is diligently pursuing licensed alternatives to the use of Federal storage capacity for the storage of spent nuclear fuel expected to be generated by the person in the future so as to assure the availability of additional storage capacity as soon as possible through alternatives including—

(i) Expansion of storage facilities at the site of any civilian nuclear power reactor operated by the person;

(ii) Construction of new or additional storage facilities at the site of any civilian nuclear power reactor operated by the person;

(iii) Acquisition of modular or mobile spent nuclear fuel storage equipment, including spent nuclear fuel storage casks, for use at the site of any civilian nuclear power reactor operated by the person; and

(iv) Transshipment to another civilian nuclear power reactor owned by the person.

(b) In making an initial determination under this section, the Executive Director for Operations, or his designee, shall be guided by the criteria set forth in § 53.30.

(c) An initial determination under this section shall be in writing and shall contain a full explanation of the facts upon which the determination is based and the reasons for granting or denying the request. An affirmative determination shall, at a minimum, specify the amount of spent nuclear fuel that cannot reasonably be stored on site and the schedule for when Federal storage is needed, and may contain conditions on which the determination is dependent. A copy of the initial determination shall be sent to the person who filed the request.

§ 53.28 Final determination.

(a) An initial determination under § 53.27 shall be filed with the Office of the Secretary of the Commission. Such initial determination shall constitute the final determination of the Commission thirty (30) days after its issuance, unless the Commission decides to review the initial determination under paragraph (b) of this section.

(b) Within thirty days after the Executive Director for Operations or his designee, makes an initial determination, the Commission may on its own motion review the determination.

(c) The Commission may, at its discretion, extend the time for review of an initial determination under paragraph

(b) of this section; provided, however, that if the Commission has not completed its review or issued a final determination within six (6) months of the filing of a request under this part, the initial determination of the Executive Director shall constitute the final determination of the Commission.

(d) No petition or other request for Commission review of an initial determination under § 53.27 will be entertained by the Commission.

§ 53.29 Notice of issuance of a final determination.

(a) Upon the issuance of a final Commission determination or after the expiration of the time for Commission review of an initial determination under § 53.28, the Secretary of the Commission will notify, in writing, the person making the request, and the Office of Civilian Radioactive Waste Management of the Department of Energy of the final determination.

(b) The Secretary of the Commission will also publish notice of the issuance of the final determination in the Federal Register.

§ 53.30 Criteria for a Commission determination.

(a) In making the determination required by § 53.27(a)(1), the Commission shall consider the existence of technical, economic, regulatory, or health and safety factors that would make the implementation of any alternative to Federal interim storage of spent nuclear fuel set forth in § 53.13(c) impractical such as—

(1) Suitability of the site for implementation of an alternative, including considerations of structural integrity.

(2) Inability to meet the Commission's regulatory requirements for implementation and licensing of an alternative due to factors beyond the licensee's control and despite the licensee's diligent and good faith efforts.

(3) Inability to obtain necessary storage or shipping equipment in a timely manner.

(4) Modifications that would result in the excessive reduction of code design margins.

(5) Extraordinary costs of implementation that are clearly unreasonable in view of the amount of additional storage capacity needed or the time for which additional storage capacity is needed.

(6) Unforeseen or unavoidable delays in the licensing or implementation of an alternative due to factors beyond the licensee's control and despite the licensee's diligent and good faith efforts.

(7) Legal impediments to the implementation of an alternative, such as state and local laws or preexisting contractual agreements, that cannot be alleviated in a timely manner.

(8) Occupational or off-site radiation exposure or on-site construction hazards, that are clearly unreasonable in view of the amount of additional storage capacity needed or the time for which additional storage capacity is needed.

(b) In making the determination required by § 53.27(a)(1), the Commission shall ensure the maintenance of a full core reserve at the site of the civilian nuclear power reactor for which the request is being made.

(c) If the person requesting the determination demonstrates, and the Commission finds, that the maintenance of a single full core reserve at the reactor site is either inadequate or not necessary, for continued orderly operation of the reactor, the Commission may make an exception to the provision of paragraph (b) of this section.

(d) In making the determination by § 53.27(a)(2), the Commission will consider whether the person submitting the request has demonstrated diligent and timely efforts to initiate activities reasonably calculated to implement alternatives to Federal interim storage of spent fuel on a schedule commensurate with the need to support the continued orderly operation of the reactor, including—

(1) Diligent and good faith efforts to prepare and file existing license application(s) for spent nuclear fuel storage alternative(s) as early as possible so as to provide sufficient time to allow for design, licensing, and implementation; and

(2) Subsequent developments beyond the control of the person submitting the request that (i) have changed the original estimate of when and how much additional storage capacity will be needed, or (ii) would prevent the timely implementation of one or more alternatives; and

(3) The timely preparation and implementation of a spent nuclear fuel storage program or plan that evaluates the feasibility of alternatives to Federal storage of spent nuclear fuel, taking into account technical, economic, regulatory, and public health and safety factors, and that includes the prompt development of feasible alternatives to Federal storage.

Dated at Washington, D.C., this 26th day of April 1983.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

PART 53

CRITERIA AND PROCEDURES FOR DETERMINING THE ADEQUACY···

OF AVAILABLE SPENT NUCLEAR FUEL STORAGE CAPACITY

STATEMENTS OF CONSIDERATION

50 FR 5548
Published 2/11/85
Effective 3/13/85

Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity

See Part 1 Statements of Consideration

≫**50 FR 8605**
Published 3/4/85

Criteria and Procedures for Determining the Adequacy of Available Spent Nuclear Fuel Storage Capacity

See Part 1 Statements of Consideration

PART 55

OPERATORS' LICENSES

GENERAL PROVISIONS

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APPENDICES

Appendix A—Requalification Programs for Licensed Operators of Production and Utilization Facilities.

Authority: Secs. 107, 161, 68 Stat. 939, 948, as amended (42 U.S.C. 2137, 2201); secs. 201, 202, 88 Stat. 1242, as amended, 1244 (42 U.S.C. 5841, 5842).

Section 55.40 also issued under secs. 186, 187, 68 Stat. 955 (42 U.S.C. 2236, 2237).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); §§ 55.3 and 55.31(a)–(d) are issued under sec. 1611, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and § 55.41 is issued under sec. 1610, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

GENERAL PROVISIONS

§ 55.1 Purpose.

The regulations in this part establish procedures and criteria for the issuance of licenses to operators, including senior operators, of facilities licensed pursuant to the Atomic Energy Act of 1954, as amended, or section 202 of the Energy Reorganization Act of 1974 and Part 50 of this chapter; and provide for the terms and conditions upon which the Commission will issue these licenses.

28 FR 3197

§ 55.2 Scope.

The regulations contained in this part apply to any individual who manipulates the controls of any facility licensed pursuant to Part 50 of this chapter and to any individual designated by a facility licensee to be responsible for directing the licensed activities of licensed operators.

40 FR 8774

§ 55.3 License Requirements.

(a) No person may perform the function of an operator as defined in this part except as authorized by a license issued by the Commission;

(b) No person may perform the function of a senior operator as defined in this part except as authorized by a license issued by the Commission.

28 FR 3197

§ 55.4 Definitions.

As used in this part:

(a) "Act" means the Atomic Energy Act of 1954 including any amendments thereto.

(b) "Commission" means the Nuclear Regulatory Commission or its duly authorized representatives.

(c) "Facility" means any production facility or utilization facility as defined in Part 50 of this chapter.

(d) "Operator" is any individual who manipulates a control of a facility. An individual is deemed to manipulate a control if he directs another to manipulate a control.

(e) "Senior operator" is any individual designated by a facility licensee under Part 50 of this chapter to direct the licensed activities of licensed operators.

(f) "Controls" when used with respect to a nuclear reactor means apparatus and mechanisms the manipulation of which

directly affect the reactivity or power level of the reactor. "Controls" when used with respect to any other facility means apparatus and mechanisms the manipulation of which could affect the chemical, physical, metallurgical, or nuclear process of the facility in such a manner as to affect the protection of health and safety against radiation. [8 FR 3197]

(g) "United States" when used in a geographical sense, includes all territories and possessions of the United States, and Puerto Rico. [45 FR 18905]

§ 55.5 Communications. [47 FR 56984]

(a) Except as provided under a regional licensing program identified in paragraph (b) of this section, any communication or report concerning the regulations in this part and any application filed under these regulations may be submitted to the Commission as follows:

(1) By mail addressed to—Director of Nuclear Reactor Regulation or Director of Nuclear Material Safety and Safeguards, as appropriate, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

(2) By delivery in person to the Commission offices at—

(i) 1717 H St. NW., Washington, D.C. or

(ii) 7920 Norfolk Avenue, Bethesda, Maryland.

(b)(1) The Commission has delegated to the Regional Administrators of Regions I, II, III, IV, and V authority and responsibility pursuant to the regulations in this part for the issuance and renewal of licenses for operators and senior operators of nuclear reactors licensed under 10 CFR Part 50 and located in these regions. [48 FR 45223]

(2) Any application filed under the regulations in this part involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region I and any inquiry, communication, information, or report relating to matters subject to the regulations in this part and involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region I must be submitted by mail or in person to the Regional Administrator, Region I, U.S. Nuclear Regulatory Commission, 631 Park Avenue, King of Prussia, Pennsylvania 19406. The Regional Administrator of Region I or his designee will transmit to the Director of Nuclear Reactor Regulation any matter that is not within the scope of the Regional Administrator's delegated authority. [48 FR 33243]

(3) Any application filed under the regulations in this part involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region II and any inquiry, communication, information, or report relating to matters subject to the regulations in this part and involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region II must be submitted by mail or in person to the Regional Administrator, Region II, U.S. Nuclear Regulatory Commission, 101 Marietta Street, NW, Suite 2900, Atlanta, Georgia 30323. The Regional Administrator of Region II, or his designee, will transmit to the Director of Nuclear Reactor Regulation any matter which is not within the scope of the Regional Administrator's delegated authority. [49 FR 47823]

(4) Any application filed under the regulations in this part involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region III, and any inquiry, communication, information or report relating to matters subject to the regulations in this part and involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region III, must be submitted by mail or in person to the Regional Administrator, Region III, U.S. Nuclear Regulatory Commission, 799 Roosevelt Road, Glen Ellyn, Illinois 60137. The Regional Administrator of Region III, or his designee, will transmit to the Director of Nuclear Reactor Regulation any matter which is not within the scope of the Regional Administrator's delegated authority. [48 FR 33234]

(5) Any application filed under the regulations in this part involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region IV and any inquiry, communication, information, or report relating to matters subject to the regulations in this part and involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region IV must be submitted by mail or in person to the Regional Administrator, Region IV, U.S. Nuclear Regulatory Commission, 611 Ryan Plaza Drive, Suite 1000, Arlington, Texas 76011. The Regional Administrator of Region IV or his designee will transmit to the Director of Nuclear Reactor Regulation any matter that is not within the scope of the Regional Administrator's delegated authority. [48 FR 45223]

(6) Any application filed under the regulations in this part involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region V and any inquiry, communication, information, or report relating to matters subject to the regulations in this part and involving a nuclear reactor licensed under 10 CFR Part 50 and located in Region V must be submitted by mail or in person to the Regional Administrator, Region V, U.S. Nuclear Regulatory Commission, 1450 Maria Lane, Suite 210, Walnut Creek, California 94596. The Regional Administrator of Region V or his designee will transmit to the Director of Nuclear Reactor Regulation any matter that is not within the scope of the Regional Administrator's delegated authority. [48 FR 45223]

§ 55.6 Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

[28 FR 3197]

§ 55.8a Information collection requirements: OMB approval.

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). OMB has approved the information collection requirements contained in this part under control number 3150-0018.

(b) The approved information collection requirements contained in this part appear in § 55.41 and Appendix A.

(c) This part contains information collection requirements in addition to those approved under the control numbers specified in paragraph (a) of this section. These information collection requirements and the control numbers under which they are approved are as follows:

(1) In §§ 55.10, 55.33, and 55.60, Form NRC-396 is approved under control number 3150-0024.

(2) In §§ 55.10, 55.12, and 55.33, Form NRC-398 is approved under control number 3150-0090.

[49 FR 19623]

EXEMPTIONS

§ 55.7 Specific exemptions.

The Commission may, upon application by an interested person, or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property and are otherwise in the public interest.

[28 FR 3197]

§ 55.8 Additional requirements.

The Commission may, by rule, regulation, or order, impose upon any licensee such requirements in addition to those established in the regulations in this part, as it deems appropriate or necessary to protect health and to minimize danger to life or property.

§ 55.9 Exemptions from license.

Nothing in this part shall be deemed to require a license for:

(a) An individual who manipulates the controls of a research or training reactor as part of his training as a student in a nuclear engineering course under the direction and in the presence of a licensed operator or senior operator;

[28 FR 3197]

(b) An individual who manipulates the controls of a facility as a part of his training to qualify for an operator license under this part under the direction and in the presence of a licensed operator or senior operator.

LICENSE APPLICATIONS

§ 55.10 Contents of applications.

(a) As provided in § 55.5, each application for a license must be filed on Form NRC-396 with the Director of Nuclear Reactor Regulation, the Director of Nuclear Material Safety and Safeguards, or a designated Regional Administrator, as appropriate. The application must be submitted in triplicate, except for the report of medical examination, and must contain the following information.

[49 FR 19623]

(1) The full name, citizenship, age, address, and present employment of the applicant;

(2) The education and pertinent experience of the applicant, including detailed information on the extent and nature of responsibility;

(3) Serial numbers of any operator and senior operator license issued by the Commission to the applicant and the expiration date of each;

(4) The specific facility for which the applicant seeks an operator or senior operator license;

(5) The written request of an authorized representative of the facility licensee that the operating test be administered to the applicant of the facility.

[47 FR 56984]

(6) Evidence that the applicant has learned to operate the controls in a competent and safe manner and has need for an operator or a senior operator license in the performance of his duties. The Commission may accept as proof of this a certification of an authorized representative of the facility licensee where the applicant's services will be utilized. This certification must include details on courses of instruction administered by the facility licensee, number of course hours, number of hours of training and nature of training received at the facility, and for reactors, the startup and shutdown experience received.

(7) A report of a medical examination by a licensed medical practitioner, in one copy on the form prescribed in § 55.80 (Form NRC-396).

[49FR19623]

(b) The Commission may at any time after the filing of the original application, and before the expiration of the license, require further information in order to enable it to determine whether the application should be granted or denied or whether a license should be revoked, modified or suspended.

(c) An applicant whose application has been denied because of his physical condition or general health may submit a further report of medical examination at any time as a supplement to his original application.

(d) Each application and statement shall contain complete and accurate disclosure as to all matters and things required to be disclosed. All applications and statements, other than the matters required by items 5, 6, and 7 of paragraph (a) of this section shall be signed by the applicant.

[28 FR 3197]

§ 55.11 Requirements for the approval of application.

An application for a license pursuant to the regulations in this part will be approved if the Commission finds that:

(a) The physical condition and the general health of the applicant are not such as might cause operational errors endangering public health and safety.

(1) Epilepsy, insanity, diabetes, hypertension, cardiac disease, fainting spells, defective hearing or vision or any other physical or mental condition which might cause impaired judgment or motor coordination may constitute sufficient cause for denial of an application.

(2) If an applicant's vision, hearing and general physical condition do not meet the minimum standards normally considered necessary, the Commission may approve the application and include conditions in the license to accommodate the physical defect. The Commission will consider the recommendations of the facility licensee or holder of an authorization and of the examining physician on

Form NRC-396 in arriving at its decision.

(b) The applicant has passed a written examination and operating test or simulated operating test as may be prescribed by the Commission to determine that the applicant has learned to operate and, in the case of a senior operator, to operate and to direct the licensed activities of licensed operators in a competent and safe manner. 49 FR 42693

(c) The applicant's service as a licensed operator or senior operator will be utilized on the facility for which he seeks a license or on a similar facility within the United States. 28 FR 3197

§ 55.12 Re-applications.

(a) Any applicant whose application for a license has been denied because of failure to pass the written examination or operating test or both may file a new application for license on Form NRC-396 two months after the date of denial. Any new application shall be accompanied by a statement signed by an authorized representative of the facility licensee by whom the applicant will be employed, stating in detail the extent of additional training which the applicant has received and certifying that he or she is ready for re-examination. An applicant may file a third application six months after the date of denial of the second application, and may file further successive applications two years after the date of denial of each prior application. 49 FR 19623

(b) An applicant who has passed either the written examination or operating test and failed the other may request in a new application that he be excused from re-examination on the examination or test which he has passed. The Commission may in its discretion grant the request if it determines that sufficient justification is presented under all the circumstances. 28 FR 3197

WRITTEN EXAMINATIONS AND OPERATING TESTS

§ 55.20 Scope of examinations.

The written examination and operating test for a license as an operator or a senior operator are designed to test the applicant's understanding of the facility design and his familiarity with the controls and operating procedures of the facility. The written examination is based in part on information in the final* safety analysis report, operating manuals, and license for the facility.

§ 55.21 Content of operator written examination.

The operator written examination, to the extent applicable to the facility, will include questions on:

(a) Fundamentals of reactor theory, including fission process, neutron multiplication, source effects, control rod effects, and criticality indications.

(b) General design features of the core, including core structure, fuel elements, control rods, core instrumentation, and coolant flow.

(c) Mechanical design features of the reactor primary system.

(d) Auxiliary systems which affect the facility.

(e) General operating characteristics, including causes and effects of temperature, pressure and reactivity changes, effects of load changes, and operating limitations and reasons for them.

(f) Design, components and functions of reactivity control mechanisms and instrumentation.

(g) Design, components and functions of safety systems, including instrumentation, signals, interlocks, automatic and manual features. 28 FR 3197

(h) Components, capacity and functions of reserve and emergency systems.

(i) Shielding, isolation and containment design features, including access limitations.

(j) Standard and emergency operating procedures for the facility and plant.

(k) Purpose and operation of radiation monitoring system, including alarm and survey equipment.

(l) Radiological safety principles and procedures.

§ 55.22 Content of senior operator written examination.

The senior operator written examination to the extent applicable to the facility, will include questions on the items specified in §55.21 and in addition on the following:

(a) Conditions and limitations in the facility license.

(b) Design and operating limitations in the technical specifications for the facility.

(c) Facility licensee procedures required to obtain authority for design and operating changes in the facility.

(d) Radiation hazards which may arise during the performance of experiments, shielding alterations, maintenance activities and various contamination conditions. 28 FR 3197

(e) Reactor theory, including details of fission process, neutron multiplication, source effects, control rod effects, and criticality indications.

(f) Specific operating characteristics, including coolant chemistry and causes and effects of temperature, pressure and reactivity changes.

(g) Procedures and limitations involved in initial core loading, alterations in core configuration, control rod programming, determination of various internal and external effects on core reactivity.

(h) Fuel handling facilities and procedures.

(i) Procedures and equipment available for handling and disposal of radioactive materials and effluents.

§ 55.23 Scope of operator and senior operator operating tests. 49 FR 42693

The operating tests or simulated operating tests administered to applicants for operator and senior operator licenses are generally similar in scope. The test, to the extent applicable to the facility, requires the applicant to demonstrate an understanding of:

(a) Pre-start-up procedures for the facility, including associated plant equipment which could affect reactivity.

(b) Required manipulation of console controls to bring the facility from shutdown to designated power levels.

(c) The source and significance of annunciator signals and condition-indicating signals and remedial action responsive thereto.

(d) The instrumentation system and the source and significance of reactor instrument readings. 28 FR 3197

(e) The behavior characteristics of the facility.

(f) The control manipulation required to obtain desired operating results during normal, abnormal and emergency situations.

(g) The operation of the facility's heat removal systems, including primary coolant, emergency coolant, and decay heat removal systems, and the relation of the proper operation of these systems to the operation of the facility.

(h) The operation of the facility's auxiliary systems which could affect reactivity.

(i) The use and function of the facility's radiation monitoring systems,

*Amended 31 FR 12774.

including fixed radiation monitors and alarms, portable survey instruments, and personnel monitoring equipment.

(j) The significance of radiation hazards, including permissible levels of radiation, levels in excess of those authorized and procedures to reduce excessive levels of radiation and to guard against personnel exposure.

(k) The emergency plan for the facility, including the operator's or senior operator's responsibility to decide whether the plan should be executed and the duties assigned under the plan.

(l) The necessity for a careful approach to the responsibility associated with the safe operation of the facility.

§ 55.24 Waiver of examination and test requirements.

On application, the Commission may waive any or all of the requirements for a written examination and operating test if it finds that the applicant:

(a) Has had extensive actual operating experience at a comparable facility within two years prior to the date of application.

(b) Has discharged his responsibilities competently and safely and is capable of continuing to do so. The Commission may accept as proof of the applicant's past performance a certification of an authorized representative of the facility licensee or holder of an authorization by which the applicant was previously employed. The certification shall contain a description of the applicant's operating experience, including an approximate number of hours the applicant operated the controls of the facility, the duties performed, and the extent of his responsibility.

(c) Has learned the operating procedure for and is qualified to operate competently and safely the facility designated in his application. The Commission may accept as proof of the applicant's qualifications a certification of an authorized representative of the facility licensee or holder of an authorization where the applicant's services will be utilized.

§ 55.25 Administration of operating test prior to initial criticality.

The Commission may administer a simulated operating test to an applicant for a license to operate a reactor prior to its initial criticality if a written request by an authorized representative of the facility licensee is sufficient for the Commission to find that:

(a) There is an immediate need for the applicant's services.

(b) The applicant has had extensive actual operating experience at a comparable reactor or has satisfactorily completed an NRC-approved license training program which includes simulator training.

(c) The applicant has a thorough knowledge of the reactor control system, instrumentation and operating procedures under normal, abnormal, and emergency conditions.

(d) The reactor control mechanism and instrumentation are in such condition as determined by the Commission to permit effective administration of a simulated operating test.

LICENSES

§ 55.30 Issuance of licenses.

On determining that an application meets the requirements of the Act and the regulations of the Commission, the Commission will issue a license in such form and containing such conditions and limitations as it deems appropriate and necessary.

§ 55.31 Conditions of the licenses.

Each license shall contain and is subject to the following conditions, whether stated in the license or not:

(a) Neither the license nor any right under the license shall be assigned or otherwise transfered.

(b) The license is limited to the facility for which it is issued.

(c) The license is limited to those controls of the facility specified in the license.

(d) The license is subject to, and the licensee shall observe, all applicable rules, regulations and orders of the Commission.

(e) If a licensee has not been actively performing the functions of an operator or senior operator for a period of four months or longer, he shall, prior to resuming activities licensed pursuant to this part, demonstrate to the Commission that the knowledge and understanding of facility operation and administration are satisfactory. The Commission may accept as evidence, a certification by an authorized representative of the facility licensee by which the licensee has been employed.

†(f) Such other conditions as the Commission may impose to protect health or to minimize danger to life or property.

§ 55.32 Expiration.

Each operator and senior operator license shall expire two years after the date of issuance.

§ 55.33 Renewal of licenses.

(a) Application for renewal of a license on Form NRC-398 shall be signed by the applicant and shall contain the following information:

(1) The full name, citizenship, address and present employment of the applicant;

(2) The serial number of the license for which renewal is sought;

(3) The experience of the applicant under his existing license, including the approximate number of hours during which he has operated the facility;

(4) A statement that during the effective term of his current license the applicant has satisfactorily completed the requalification program for the facility for which operator or senior operator license renewal is sought. In the case of an application for license renewal filed within two years after September 17, 1973, if the facility licensee has not implemented the requalification program requirements in time for the applicant to complete an approved requalification program before the effective term of his current license expires, the applicant shall submit a statement showing his current enrollment in an approved requalification program and describing those portions of the program which he had completed by the date of his application for license renewal;

†(5) Evidence that the licensee has discharged his license responsibilities competently and safely. The Commission may accept as evidence of this a certificate of an authorized representative of the facility licensee or holder of an authorization by which the licensee has been employed;

(6) A report by a licensed medical practitioner in the form prescribed in § 55.60 (Form NRC-396).

(b) In any case in which a licensee not less than thirty days prior to the expiration of his existing license has filed an

†Redesignated 38 FR 22221.

application in proper form for renewal or for a new license, the existing license shall not expire until the application for renewal or for a new license has been finally determined by the Commission.

(c) The license will be renewed if the Commission finds that:

(1) The physical condition and the general health of the licensee continue to be such as not to cause operational errors which might endanger public health and safety; and

(2) (i) The licensee has been actively and extensively engaged as an operator or as a senior operator under his existing license, has discharged his responsibilities competently and safely, and is capable of continuing to do so.

(ii) The licensee has completed a requalification program or is presently enrolled in a requalification program if the completion of the requalification program will occur after the expiration of his license as provided in subparagraph (a)(4) of this section.

(iii) If the requirements of paragraph (c)(2)(i) and (ii) of this section are not met, the Commission may require the applicant for renewal to take a written examination or an operating test or both.

(3) There is a continued need for a license to operate or direct operators at the facility designated in the application.

MODIFICATION AND REVOCATION OF LICENSES

§55.40 Modification and revocation of licenses.

(a) The terms and conditions of all licenses shall be subject to amendment, revision, or modification by reason of amendments to the Act, or by reason of rules, regulations or orders issued in accordance with the Act or any amendments thereto.

(b) Any license may be revoked, suspended or modified, in whole or in part, for any material false statement in the application or any statement of fact required under section 182 of the Act, or because of conditions revealed by such application or statement of fact or any report, record, inspection or other means which would warrant the Commission to refuse to grant a license on an original application, or for violation of, or failure to observe any of the terms and conditions of the Act, or the license, or of any rule, regulation or order of the Commission, or any conduct determined by the Commission to be a hazard to safe operation of the facility

§ 55.41 Notification of disability.

The licensee shall notify the Commission of the occurrence of any disability referred to in § 55.11(a)(1) that occurs after the submission of the licensee's medical examination form. As provided in § 55.5, the licensee shall notify the Director of Nuclear Reactor Regulation, the Director of Nuclear Material Safety and Safeguards, or the designated Regional Administrator, as appropriate, within 15 days after the occurrence of the disability.

ENFORCEMENT

§ 55.50 Violations.

An injunction or other court order may be obtained prohibiting any violation of any provision of the Atomic Energy Act of 1954, as amended, or Title II of the Energy Reorganization Act of 1974, or any regulation or order issued thereunder. A court order may be obtained for the payment of a civil penalty imposed pursuant to section 234 of the Act for violation of section 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, or 109 of the Act, or section 206 of the Energy Reorganization Act of 1974, or any rule, regulation, or order issued thereunder, or any term, condition, or limitation of any license issued thereunder, or for any violation for which a license may be revoked under section 186 of the Act. Any person who willfully violates any provision of the Act or any regulation or order issued thereunder may be guilty of a crime and, upon conviction, may be punished by fine or imprisonment or both, as provided by law.

CERTIFICATE OF MEDICAL EXAMINATION

§ 55.60 Examination form.

(a) An applicant shall complete and sign Form NRC-396, "Certificate of Medical Examination."

(b) The examining physician shall complete and sign Form NRC-396, and, as provided in § 55.5, shall mail the completed form to the Director of Nuclear Reactor Regulation, the Director of Nuclear Material Safety and Safeguards, or the designated Regional Administrator, as appropriate.

[Note removed 49 FR 19623]

§ 55.61 [Deleted 40 FR 8774.]

APPENDIX A

REQUALIFICATION PROGRAMS FOR LICENSED OPERATORS OF PRODUCTION AND UTILIZATION FACILITIES

Introduction

Section 50.54 of 10 CFR Part 50 requires that individuals who manipulate controls of production and utilization facilities be licensed as operators by the Commission and that individuals who direct the licensed activities of licensed operators be licensed as senior operators in accordance with 10 CFR Part 55. Section 55.33 of 10 CFR Part 55 requires that each licensed individual demonstrate his continued competence every two years in order for his license to be renewed. Competence may be demonstrated, in lieu of reexamination, by satisfactory completion of a requalification program which has been reviewed and approved by the Commission.

Periodic requalification for all operators and senior operators of production and utilization facilities is necessary for the personnel to maintain competence, particularly to respond to abnormal and emergency situations. The complexity of design and operating modes of production and utilization facilities require that ongoing comprehensive requalification programs be conducted for all licensed operators and senior operators as a matter of sound principle and practice.

Licensed operators and senior operators of production and utilization facilities who have been actively and extensively engaged as operators or as senior operators shall participate in requalification programs meeting the requirements of this Appendix. Individuals who maintain operator or senior operator licenses for the purpose of providing backup capability to the operating staff shall participate in the requalification programs except to the extent that their normal duties preclude the need for specific retraining in particular areas. Licensed operators or senior operators whose licenses are conditioned to permit manipulation of specific controls only shall participate in those portions of the requalification program appropriate to the duties they perform.

The requalification program requirements involving manipulation of controls may be performed on the facility for which the operator is licensed. However, the use of a simulator as specified in Paragraphs 3e and 4d of this appendix is permissible and such use is encouraged.

Requalification Program Requirements

1. *Schedule.* The requalification program shall be conducted for a continuous period not to exceed two years, and upon conclusion shall be promptly followed, pursuant to a continuous schedule, by successive requalification programs.

2. *Lectures.* The requalification program shall include preplanned lectures on a regular and continuing basis throughout the license period in those areas where annual operator and senior operator written examinations indicate that emphasis in scope and depth of coverage is needed in the following subjects:

a. Theory and principles of operation.

b. General and specific plant operating characteristics.

c. Plant instrumentation and control systems.

d. Plant protection systems.

e. Engineered safety systems.

f. Normal, abnormal, and emergency operating procedures.

g. Radiation control and safety.

h. Technical specifications.

i. Applicable portions of Title 10, Chapter I, Code of Federal Regulations.

Other training techniques including films, videotapes and other effective training aids may also be used.

Individual study on the part of each operator shall be encouraged. However, a requalification program based solely upon the use of films, videotapes and on individual study is not an acceptable substitute for a lecture series.

3. *On-the job training.* The requalification program shall include on-the-job training so that:

a. Each licensed operator of a production or utilization facility manipulates the plant controls and each licensed senior operator either manipulates the controls or directs the activities of individuals during plant control manipulations during the term of their licenses. For reactor operators and senior operators, these manipulations shall consist of at least 10 reactivity control manipulations in any combination of reactor startups, reactor shutdowns or other control manipulations which demonstrate skill and or familiarity with reactivity control systems.

b. Each licensed operator and senior operator has demonstrated satisfactory understanding of the operation of all apparatus and mechanisms and knows the operating procedures in each area for which he is licensed.

c. Each licensed operator and senior operator is cognizant of facility design changes, procedure changes, and facility license changes.

d. Each licensed operator and senior operator reviews the contents of all abnormal and emergency procedures on a regularly scheduled basis.

e. A simulator may be used in meeting the requirements of paragraphs 3a* and 3b* if the simular reproduces the general operating characteristics of the facility involved, and the arrangement of the instrumentation and controls of the simulator is similar to that of the facility involved.

4. *Evaluation.* The requalification program shall include:

a. Annual written examinations which determine areas in which retraining is needed to upgrade licensed operator and senior operator knowledge.

b. Written examinations which determine licensed operators' and senior operators' knowledge of subjects covered in the requalification program and provide a basis for evaluating their knowledge of abnormal and emergency procedures.

c. Systematic observation and evaluation of the performance and competency of licensed operators and senior operators by supervisors and or training staff members including evaluation of actions taken or to be taken during actual or simulated abnormal and emergency conditions.

d. Simulation of emergency or abnormal conditions that may be accomplished by using the control panel of the facility involved or by using a simulator. Where the control panel of the facility is used for simulation, the actions taken or to be taken for the emergency or abnormal condition shall be discussed; actual manipulation of the plant controls is not required. If a simulator is used in meeting the requirements of paragraph 4c. the simulator shall accurately reproduce the operating characteristics of the facility involved and the arrangement of the instrumentation and controls of the simulator shall closely parallel that of the facility involved.

e. Provisions for each licensed operator and senior operator to participate in an accelerated requalification program where performance evaluations conducted pursuant to paragraphs 4a through 4d clearly indicate the need.

5. *Records.*

a. Records of the requalification program shall be maintained for a period of two years from the date of the recorded event to document the participation of each licensed operator and senior operator in the requalification program. The records shall contain copies of written examinations administered, the answers given by the licensee, results of evaluations and documentation of any additional training administered in areas in which an operator or senior operator has exhibited deficiencies.

b. Records which must be maintained pursuant to this appendix may be the original or a reproduced copy or microform if such reproduced copy or microform is duly authenticated by authorized personnel and the microform is capable of producing a clear and legible copy after storage for the period specified by Commission regulations.

c. If there is a conflict between the Commission's regulations in this part, license condition, or other written Commission approval or authorization pertaining to the retention period for the same type of record, the retention period specified in the regulations in this part for such records shall apply unless the Commission, pursuant to § 55.7, has granted a specific exemption from the record retention requirements specified in the regulations in this part.

6. *Alternative training programs.* The requirements of this appendix may be met by requalification programs conducted by persons other than the facility licensee if such requalification programs are similar to the program described in paragraphs 1 through 5, and the alternative program has been approved by the Commission.

7. *Applicability to research and test reactors and non-reactor facilities.* To accommodate specialized modes of operation and differences in control, equipment, and operator skills and knowledge, the requalification program for each licensed operator and senior operator of a reasearch or test reactor or of a non-reactor facility shall conform generally but need not be identical to the requalification program outlined in paragraphs 1 through 6 of this appendix. However, significant deviations from the requirements of this appendix shall be permitted only if supported by written justification and approved by the Commission.

*Amended 38 FR 26354.

38 FR 22221 38 FR 22221 38 FR 22221 41 FR 18300 38 FR 22221

UNITED STATES NUCLEAR REGULATORY COMMISSION

RULES and REGULATIONS

TITLE 10, CHAPTER 1, CODE OF FEDERAL REGULATIONS—ENERGY

PART 55

OPERATORS' LICENSES

PROPOSED RULE MAKING

49 FR 46428
Published 11/26/84
Comment period expires 2/25/85.

Operator's Licences and Conforming Amendment

See Part 50 Proposed Rule Making

PART 55

OPERATORS' LICENSES

STATEMENTS OF CONSIDERATION

28 FR 3197
Published 4/3/63
Effective 6/2/63

On October 12, 1961, the Atomic Energy Commission published in the FEDERAL REGISTER a notice of proposed rule making to revise Part 55 in a number of respects deemed desirable on the basis of experience acquired to date in its administration. Included therein was a provision for the licensing of individuals as supervisory operators of facilities and the requirements of their licensing.

The Commission has received many comments from interested persons and organizations. As a consequence the proposed amendment has been rewritten with incorporation of a number of these suggestions. The principal changes from the proposed amendment are as follows:

1. The proposed term "supervisory operator" has been changed throughout the amended regulation to the term "senior operator". The main reason for the change is to avoid any implication that the Commission, in granting such a license, is expressing an opinion on whether the holder of the license is part of or eligible for a management group.

2. In § 55.4, item (f), the definition of "controls" has been revised to include "apparatus and mechanisms * * * which directly affect the power level * * *" This narrower interpretation, as suggested in public comment, is in accord with the original Commission intent. The definition of "controls" for facilities other than reactors has been revised to include "apparatus and mechanisms * * * which could affect * * * process of the facility in such a manner as to affect the protection of health and safety against radiation." This revision clarifies the protection against radiation which was only implied in the proposed definition.

3. Section 55.12 has been revised to provide for waiting periods of two months, six months and two years respectively before reapplication for licensing following a denial. These time periods are less than the proposed intervals of ninety days, one year and three years, respectively. These reductions were made to avoid placing undue burdens on facility licensees and employees but are still considered sufficiently long to provide for adequate selection and training of operators and senior operators.

4. Sections 55.20, 55.21, 55.22 and 55.23 have been revised to eliminate the phrase "at which the applicant will be employed". The revision permits the licensing of an applicant on a facility where his services will be utilized although he is not employed.

Pursuant to the Atomic Energy Act of 1954, as amended and the Administrative Procedure Act of 1946, the following amendment to 10 CFR Part 55 is published as a document subject to codification to be effective 60 days after publication in the FEDERAL REGISTER.

31 FR 4668
Published 3/19/66
Effective 3/19/66

Miscellaneous Amendments

See Part 20 Statements of Consideration.

31 FR 12774
Published 9/30/66
Effective 10/30/66

Miscellaneous Amendments

See Part 2 Statements of Consideration.

38 FR 22221
Published 8/17/73
Effective 9/17/73

Requalification Requirements for Operating Personnel of Production and Utilization Facilities

See Part 50 Statements of Consideration.

38 FR 26354
Published 9/20/73

Requalification Requirements for Operating Personnel of Production and Utilization Facilities; Correction

See Part 50 Statements of Consideration.

40 FR 8774
Published 3/3/75
Effective 3/3/75

Energy Reorganization Act; Revisions to Chapter 1 to Reflect Organizational and Procedural Changes

See Part 2 Statements of Consideration.

41 FR 16445
Published 4/19/76
Effective 4/19/76

Miscellaneous Changes to Chapter

See Part 20 Statements of Consideration.

41 FR 18300
Published 5/3/76
Effective 6/2/76

Preservation of Records

See Part 20 Statements of Consideration.

45 FR 18905
Published 3/24/80
Effectife 3/24/80

Deletion of Reference to Panama Canal Zone; Minor Amendments

See Part 4 Statements of Consideration.

47 FR 56984
Published 12/22/82
Effective 12/17/82

10 CFR Part 55

Partial Regionalization of the Operator Licensing Function

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The NRC is amending its regulations relating to operator licenses to provide information concerning the further implementation of NRC's regional licensing program. This amendment states that authority and responsibility for the issuance of licenses for operators and senior operators of licensed nuclear reactors located in Regions II and III have been assigned and delegated to the Regional Administrators of Regions II and III and specifies where applicants for these licenses should obtain necessary forms and file applications. This amendment is necessary to inform licensees, operators, applicants, and the public of current NRC organization and practice.

EFFECTIVE DATE: December 17, 1982.

FOR FURTHER INFORMATION CONTACT: Don H. Beckhan, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555; Telephone (301) 492-4868.

SUPPLEMENTARY INFORMATION: In further implementation of its regionalization program, the Commission has delegated to the Regional Administrators of Regions II and III authority and responsibility pursuant to the regulations in 10 CFR Part 55 to issue and renew licenses for operators and senior operators of nuclear reactors licensed under 10 CFR Part 50 and located in those regions.

The general delegation of authority for the Regional Administrators is described in NRC Manual Chapter 0128. Pursuant to that general delegation of authority, the Executive Director for Operations and the Director of Nuclear Reactor Regulation assigned and delegated to the Regional Administrators for Regions II and III the responsibility under 10 CFR Part 55 for licensing operators of nuclear reactors licensed under 10 CFR Part 50 and located in Regions II and III. Copies of the delegations of authority have been placed in the Commission's public document room at 1717 H Street, NW., Washington, D.C., and at the Region II Office, 101 Marietta Street, Suite 3100, Atlanta, Georgia 30303, and the Region III Office, 799 Roosevelt Road, Glen Ellyn, Illinois 60137, where they are available for inspection and copying by the public.

The revised regulations, which are intended to inform licensees and the public of current NRC practices and organization, specify where applications for operator and senior operator licenses shall be filed, where reports and communications shall be submitted and where needed information and forms may be obtained.

Since the amendments to Part 55 are nonsubstantive and relate to matters of agency organization and procedure, the notice and comment procedures of the Administrative Procedure Act (5 U.S.C. 553) do not apply and good cause exists for making the amendments effective on December 17, 1982, without the customary 30-day waiting period.

Paperwork Reduction Act Statement

This rule contains no new or amended requirements for recordkeeping, reporting, plans or procedures, applications, or any other type of information collection subject to the Paperwork Reduction Act of 1980, Pub. L. 96-511.

List of Subjects in 10 CFR Part 55

Manpower training programs, Nuclear power plants and reactors, Penalty, Reporting requirements.

Under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 552 and 553, the following amendments to 10 CFR Part 55 are published as a document subject to codification.

≫ 48 FR 33243
Published 7/21/83
Effective 7/21/83

10 CFR Part 55

Partial Regionalization of the Operator Licensing Function To Include Region I

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The NRC is amending its regulations relating to operator licenses to provide information concerning the further implementation of NRC's regional licensing program. This amendment states that authority and responsibility for the issuance of licenses for operators and senior operators of licensed nuclear reactors located in Region I has been assigned and delegated to the Regional Administrator of Region I. This amendment is necessary to inform licensees, operators, applicants, and the public of current NRC organization and practice.

EFFECTIVE DATE: July 21, 1983.

FOR FURTHER INFORMATION CONTACT: Don H. Beckham, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555; Telephone (301) 492-4868.

SUPPLEMENTARY INFORMATION: In further implementation of its regionalization program, the Commission has delegated to the Regional Administrator of Region I authority and responsibility pursuant to the regulations in 10 CFR Part 55 to issue and renew licenses for operators and senior operators of nuclear reactors licensed under 10 CFR Part 50 and located in this region.

The general delegation of authority for the Regional Administrators is described in NRC Manual Chapter 0128. Pursuant to that general delegation of authority, the Executive Director for Operations and the Director of Nuclear Reactor Regulation on November 22, 1982, assigned and delegated to the Regional Administrators for Regions II and III the responsibility under 10 CFR Part 55 for licensing operators of nuclear reactors licensed under 10 CFR Part 50 and located in Regions II and III. Now, this same responsibility has been assigned to the Regional Administrator for Region I. A copy of the delegation of authority has been placed in the Commission's public document room at 1717 H Street, NW., Washington, D.C., and at the Region I Office, 631 Park Avenue, King of Prussia, Pennsylvania 19406, where it is available for inspection and copying by the public. Assignment of this authority and responsibility to the Regional Administrators for Regions II and III was reflected in a final rule published December 22, 1982 (47 FR 56984).

The revised regulations are intended to inform licensees and the public of current NRC practices and organization.

Since the amendments to Part 55 are nonsubstantive and relate to matters of Agency organization and procedure, the notice and comment procedures of the Administrative Procedure Act (5 U.S.C. 553) do not apply and good cause exists for making the amendments effective upon publication without the customary 30-day waiting period.

Paperwork Reduction Act Statement

This final rule does not contain a new or amended information collection requirement subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). Existing requirements were approved by the Office of Management and Budget approval numbers 3150-0018 and 3150-0024.

List of Subjects in 10 CFR Part 55

Manpower training programs, Nuclear power plants and reactors, Penalty, Reporting requirements.

Under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 552 and 553, the following amendments to 10 CFR Part 55 are published as a document subject to codification.

48 FR 45223
Published 10/4/83
Effective 10/4/83

10 CFR Part 55

Completion of Regionalization of the Operator Licensing Function by Assignment of the Function to Regions IV and V

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The NRC is amending its regulations relating to operator licenses to provide information concerning the futher implementation of NRC's regional licensing program. This amendment states that authority and responsibility for the issuance of licenses for operators and senior operators of licensed nuclear reactors located in Regions IV and V have been assigned and delegated to the Regional Administrators of Regions IV and V. This amendment is necessary to inform licensees, operators, applicants, and the public of current NRC organization and practice.

EFFECTIVE DATE: October 4, 1983.

FOR FURTHER INFORMATION CONTACT: Don H. Beckham, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555; Telephone (301) 492–4868.

SUPPLEMENTARY INFORMATION: In further implementation of its regionalization program, the Commission has delegated to the Regional Administrators of Regions IV and V authority and responsibility pursuant to the regulations in 10 CFR Part 55 to issue and renew licenses for operators and senior operators of nuclear reactors licensed under 10 CFR Part 50 and located in these regions. This amendment completes implementation of assignment of the operator licensing function to the regions.

The general delegation of authority for the Regional Administrators is described in NRC Manual Chapter 0128. Pursuant to the general delegation of authority, the Executive Director for Operations and the Director of Nuclear Reactor Regulation on July 1, 1983, for Region I and November 22, 1982, for Regions II and III assigned and delegated to the Regional Administrators for these Regions the responsibility under 10 CFR Part 55 for licensing operators of nuclear reactors licensed under 10 CFR Part 50 and located in Regions I, II, and III. Now, this same responsibility has been assigned to the Regional Administrators for Regions IV and V. A copy of the delegation of authority has been placed in the Commission's public document room at 1717 H Street, NW., Washington, D.C. 20555, and also at the Region IV Office, 611 Ryan Plaza Drive, Suite 1000, Arlington, Texas 76011, and the Region V Office, 1450 Maria Lane, Suite 210, Walnut Creek, California 94596, where it is available for inspection and copying by the public. A final rulemaking for Region I, published July 21, 1983 (48 FR 33243), and for Regions II and III, published December 22, 1982 (47 FR 56984), reflected assignment of this same authority and responsibility to the administrators of these regions. The December rulemaking also specified where an applicant for a license could obtain necessary forms and file applications.

The revised regulations are intended to inform licensees and the public of current NRC practices and organization.

Since the amendments to Part 55 are nonsubstantive and relate to matters of agency organization and procedure, the notice and comment procedures of the Administrative Procedure Act (5 U.S.C. 553) do not apply and good cause exists for making the amendments effective upon publication without the customary 30-day waiting period.

Paperwork Reduction Act Statement

This final rule does not contain a new or amended information collection requirement subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). Existing requirements were approved by the Office of Management and Budget approval numbers 3150–0018 and 3150–0024.

List of Subjects in 10 CFR Part 55

Manpower training programs, Nuclear power plants and reactors, Penalty, and Reporting and recordkeeping requirements.

Under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 552 and 553, the following amendments to 10 CFR Part 55 are published as a document subject to codification.

49 FR 19623
Published 5/9/84
Effective 5/9/84

Information Collection Requirements; Display of OMB Control Numbers

See Part 0 Statements of Consideration

49 FR 42693
Published 10/24/84
Effective 11/23/84

10 CFR Part 55

Training and Qualifications of Civilian Nuclear Power Plant Personnel and Operators' Licenses

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to conform their literal language to the long-standing agency practice of conducting simulated operating tests and of treating the satisfactory completion of an NRC-approved cold license training program for training reactor operators as the equivalent of actual operating experience at a reactor. Thus an individual who has completed an NRC-approved program is eligible to take a simulated operating test as part of the licensing examination administered prior to initial criticality.

EFFECTIVE DATE: November 23, 1984.

FOR FURTHER INFORMATION CONTACT: Don Beckham, Chief, Operator Licensing Branch, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: (301) 492–4868, or Neil Jenson, Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone (202) 634–3224.

SUPPLEMENTARY INFORMATION: On August 8, 1984, the NRC proposed a rule (49 FR 31700) which would conform 10 CFR 55.25(b) to the Commission's long-standing interpretation that completion of an NRC-approved cold license training program which includes simulator training is sufficient prior experience to entitle an applicant for an operator's license to take a simulated operating test at a reactor prior to initial criticality. Clarifying changes were also made with respect to 10 CFR 55.11(b) and 55.23 to show that both operating tests and simulated operating tests meet the requirements for approval of an application for an operator's license.

Interested persons were invited to submit written comments to the Secretary of the Commission by September 7, 1984. The Commission received seven letters from utility owners which approved amending the literal language of the regulations to conform with long-standing staff practice.[1] Comments from the Union of

[1] One comment suggested insertion of the word "cold" in the amended language of 10 CFR 55.25(b) to show that it is an NRC-approved cold license training program which is intended to meet the requirement. Since this section is concerned solely with eligibility to take an operating test prior to initial criticality, this change is viewed as unnecessary. Another comment questioned the value of the ten startups included in the cold-license training program. This comment goes beyond the scope of the present rule-making.

Concerned Scientists and the Joint Intervenors to the Diablo Canyon Nuclear Power Plant licensing proceedings expressed agreement with the dissenting views of former Commissioner Gilinsky which were published along with the proposed rule (49 FR 31701). After consideration of the comments, the Commission has determined to publish the proposed rule without alteration for the reasons discussed below.[1]

The primary concern of those opposed to the rule change is their perception that the change would have the effect of permitting the operation of a new facility by a crew totally lacking in any prior "hot" experience. They do not object to the use of some newly-trained operators on initial operating shifts but regard the literal language of 10 CFR 55.25(b) as their only guarantee that at least some operators will have actual operating experience. This understandable desire is misdirected here because Part 55 is concerned only with individual operators' licenses; shift experience should properly be considered under Part 50 of the regulations. Their suggested interpretation of "actual operating experience" would require all license-holders at a new plant to have had extensive experience as a licensed operator at a comparable reactor. This would represent a much more extensive change in the regulatory scheme than is intended in the proposed rule change which is simply to update the language of the rule to reflect at least 17 years of Commission practice.

The Commission is required to address the technical adequacy of the operating organization separately from the qualifications of each individual licensed operator. *See* 10 CFR 50.57(a)(4) and 50.34(b)(6). The Commission shares the concern that there be some individuals with prior operating experience at a new reactor during the period of initial criticality and operation. To assure that this is the case, the NRC staff requires the use of shift advisors to assist in plant startup and initial operation at any plant where the initial operating crew does not possess sufficient "hot" experience.[2] As formalized in Generic Letter 84-16, dated June 27, 1984, a shift advisor is expected to have at least one year of experience at an operating nuclear power plant. The Commission believes that this requirement is sufficient to assure that prior operating experience is available to each shift at a new plant.

Nevertheless, those opposed to the rule change find in § 55.25(b) a regulatory requirement for extensive actual operating experience which they apparently interpret to mean the type of experience which could only be acquired by a licensed operator employed at a comparable facility. They object that simulator-training cannot replace such experience due to inherent problems in simulator technology and a lack of plant-specific simulators.

The Commission does not contend that simulator-training is equivalent to operating experience and as a matter of policy insists upon a certain amount of such experience on a new shift under the Part 50 regulations as explained above. However, with respect to what constitutes adequate training for all applicants for an operator's license at a cold facility, the Commission believes that its long experience in using training programs which include both simulator-training and training as a participatory observer on shift at an operating reactor, as well as training in nuclear fundamentals, including ten startups at a research reactor, and training on the actual system design of the plant at which the operator will be employed is a sound basis for licensing operators at a cold plant. Thus, the Commission has no reason to introduce a requirement for previous experience as a licensed operator for all operators at a new plant.

Section 55.25 was introduced into the regulations in 1963 as part of the 1963 amendments to Part 55 (28 FR 3197, April 3, 1963). The exact meaning of the requirement, in § 55.25(b), that an applicant for a license at a cold facility have "extensive actual operating experience at a comparable reactor" is unclear. However, the comments received on the amendments as proposed (28 FR 9653, October 12, 1961) strongly suggest that the experience referred to was the experience normally gained by a trainee at a functioning reactor.[4] Thus, for example, the requirement in the proposed regulations that training and testing take place only at a reactor where the trainee would be employed [5] was dropped prior to publication in recognition of the fact that candidates for a precritical examination would continue to receive their training at a reactor where they would not be employed.[6] Thus, the experience required by § 55.25(b) does not appear to have consisted solely of experience of employment as a licensed operator.[7] The 1965 regulatory guidance for amended Part 55 confirms this view. This guidance noted that generally six months of experience at an operating facility met the § 55.25(b) requirement. However, either an operator's license for a comparable reactor or a certification describing the applicant's training experience at a comparable facility also met the requirement.[8]

After publication of the 1963 amendments, simulators were developed and came to supplement actual experience in operator training. At least as early as 1967, the Commission was faced with the need to develop policy with respect to simulator-training in view of the construction of the Nuclear Training Center by the General Electric Company.[9] The purpose of the Center was to provide for the training of their customer operating staffs by utilizing a Dresden II reactor plant simulator. The NRC staff proposed a policy at that time under which the § 55.25(b) requirement was met by completion of a training program very similar to the type presently in use. Use of simulators did not replace actual training experience at an operating reactor although it may have diminished the length of such experience needed since transient and infrequent plant evolutions could be conducted on the simulator, compressing the time required. This approach to training programs has replaced the training programs at a functioning reactor which originally constituted an acceptable method of fulfilling the § 55.25(b) requirement. This type of training program was

[1] Documents referenced in this notice are available for viewing, or copying for a fee, at the NRC Public Document Room, 1717 H Street, NW., Washington, D.C.

[2] Seventeen units at thirteen different nuclear plant sites were licensed between April 1980 and December 1983. Eleven of the units started up with operators who were previously experienced at the plant's sister units or other plants within the utility's system; one plant started up with employees with previous experience at other plants; and five used shift advisors. See Memorandum to Hugh Thompson, Director, Division of Human Factors Safety, from Lawrence Crocker, Licensee Qualification Branch, Division of Human Factors Safety, February 21, 1984. The belief that the sense of § 55.25(b) has largely been complied with because few plants have required the use of shift advisors confuses the function of the Part 50 rules under which shift experience is evaluated with Part 55 rules which concern only requirements for an operator's license.

[4] See, generally, AEC-R 83/1, "Amendments to 10 CFR Parts 50, 55 and 115 Procedures for Licensing of Reactor Operators" (February 20, 1963), pp. 4-5, and comments to proposed §§ 55.10; 55.11; and 55.25 in AEC-R 83/2, "Supplementary Information Regarding Amendments to 10 CFR 50, 55 and 115 Procedures for Licensing Reactor Operators" (February 20, 1963).

[5] See proposed §§ 55.10(a)(7); 55.11(c); 55.20; 55.21; 55.22; and 55.23 (28 FR 9655-56, October 12, 1961).

[6] See AEC-R 83/1, pp. 4-5.

[7] Only two commercial nuclear power facilities had passed initial criticality when the amendments were proposed. Thus "actual operating experience" could not have referred to experience as a licensed operator at a commercial facility. Training of operators took place at research or military reactors. Neither original Part 55 nor the 1963 amendments specified any particular amount of experience for license applicants. The focus of the regulations was on the content of written and operating tests; the nature of the requisite training was left to the facility owner and the guidance of the Commission.

[8] See WASH 1094, "A Guide for the Licensing of Facility Operators, Including Senior Operators," pp. 9-10.

[9] See Memorandum from P.A. Morris, Director, Division of Reactor Licensing, to Harold L. Price, Director of Regulation, November 29, 1967.

incorporated into the industry standard in 1971 [10] and was approved in the 1976 regulatory guide as fulfilling the § 55.25(b) actual operating experience requirement.[11]

The Commission has permitted an individual who has successfully completed an NRC-approved training program to take the operator licensing examination for at least seventeen years. Successful completion of both the written examination and operating test is required prior to licensing. If insufficient knowledge is demonstrated in the operating test, the candidate is denied a license. The Commission believes that this experience warrants confidence in this method of determining eligibility to take the operator licensing examination at new plants. Therefore, the Commission believes that it is appropriate to update § 55.25(b) to reflect actual practice.

Environmental Impact: Categorical Exclusion

The NRC has determined that this regulation is the type of action described in categorical exclusion 10 CFR 51.22(c)(1). Therefore neither an environmental impact statement nor an environmental assessment has been prepared for this regulation.

Paperwork Reduction Act Statement

This final rule contains no information collection requirements and therefore is not subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, (5 U.S.C. 605(b)), the Commission certifies that this rule will not have a significant economic impact on a substantial number of small entities. This proposed rule affects only the licensing and operation of nuclear power plants. The companies that own these plants do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121.

List of Subjects in 10 CFR Part 55

Manpower training programs, Nuclear power plants and reactors, Penalty, Reporting and recordkeeping requirements.

For the reasons set forth above, and under the authority of the Atomic Energy Act of 1954, as amended, Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, the NRC is adopting the following amendments to 10 CFR Part 55.

49 FR 47823
Published 12/7/84
Effective 12/7/84

Minor Correcting Amendments

See Part 1 Statements of Consideration

[10] See ANSI N18.1–1971, "Selection and Training of Nuclear Power Plant Personnel."

[11] See NUREG–0094, "NRC Operator Licensing Guide, A Guide for the Licensing of Facility Operators, Including Senior Operators," (July 1976), pp. 13–14.

60.1

PART 60

DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN GEOLOGIC REPOSITORIES; LICENSING PROCEDURES

PART 60—DISPOSAL OF HIGH LEVEL RADIOACTIVE WASTES IN GEOLOGIC REPOSITORIES

48 FR 28194

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48 FR 28194

Authority: Secs. 51, 53, 62, 63, 65, 81, 161, 182, 183, 68 Stat. 929, 930, 932, 933, 935, 948, 953, 954, as amended (42 U.S.C. 2071, 2073, 2092, 2093, 2095, 2111, 2201, 2232, 2233); secs. 202, 206, 88 Stat. 1244, 1246 (42 U.S.C. 5842, 5846); secs. 10 and 14, Pub. L. 95–601, 92 Stat. 2951 (42 U.S.C. 2021a and 5851); sec. 102, Pub. L. 91–190, 83 Stat. 853 (42 U.S.C. 4332); sec. 121, Pub. L. 97–425, 96 Stat. 2228 (42 U.S.C. 10141).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 60.71 to 60.75 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

Subpart A—General Provisions

46 FR 13971

§ 60.1 Purpose and scope.

This part prescribes rules governing the licensing of the U.S. Department of Energy to receive and possess source, special nuclear, and byproduct material at a geologic repository operations area. This part does not apply to any activity licensed under another part of this chapter.

48 FR 28194

§ 60.2 Definitions.

As used in this part—

"Accessible environment" means: (1) The atmosphere, (2) the land surface, (3) surface water, (4) oceans, and (5) the portion of the lithosphere that is outside the controlled area.

"Anticipated processes and events" means those natural processes and events that are reasonably likely to occur during the period the intended performance objective must be achieved. To the extent reasonable in the light of the geologic record, it shall

be assumed that those processes operating in the geologic setting during the Quaternary Period continue to operate but with the perturbations caused by the presence of emplaced radioactive waste superimposed thereon.

"Barrier" means any material or structure that prevents or substantially delays movement of water or radionuclides.

"Candidate area" means a geologic and hydrologic system within which a geologic repository may be located.

"Commencement of construction" means clearing of land, surface or subsurface excavation, or other substantial action that would adversely affect the environment of a site, but does not include changes desirable for the temporary use of the land for public recreational uses, site characterization activities, other preconstruction monitoring and investigation necessary to establish background information related to the suitability of a site or to the protection of environmental values, or procurement or manufacture of components of the geologic repository operations area.

"Commission" means the Nuclear Regulatory Commission or its duly authorized representatives.

"Containment" means the confinement of radioactive waste within a designated boundary.

"Controlled area" means a surface location, to be marked by suitable monuments, extending horizontally no more than 10 kilometers in any direction from the outer boundary of the underground facility, and the underlying subsurface, which area has been committed to use as a geologic repository and from which incompatible activities would be restricted following permanent closure.

"Director" means the Director of the Nuclear Regulatory Commission's Office of Nuclear Material Safety and Safeguards.

"Disposal" means the isolation of radioactive wastes from the accessible environment.

"Disturbed zone" means that portion of the controlled area the physical or chemical properties of which have changed as a result of underground facility construction or as a result of heat generated by the emplaced radioactive wastes such that the resultant change of properties may have a significant effect on the performance of the geologic repository.

"DOE" means the U.S. Department of Energy or its duly authorized representatives.

"Engineered barrier system" means the waste packages and the underground facility.

"Geologic repository" means a system which is intended to be used for, or may be used for, the disposal of radioactive wastes in excavated geologic media. A geologic repository includes: (1) The geologic repository operations area, and (2) the portion of the geologic setting that provides isolation of the radioactive waste.

"Geologic repository operations area" means a high-level radioactive waste facility that is part of a geologic repository, including both surface and subsurface areas, where waste handling activities are conducted.

"Geologic setting" means the geologic, hydrologic, and geochemical systems of the region in which a geologic repository operations area is or may be located.

"Groundwater" means all water which occurs below the land surface.

"High-level radioactive waste" or "HLW" means: (1) Irradiated reactor fuel, (2) liquid wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuel, and (3) solids into which such liquid wastes have been converted.

"HLW facility" means a facility subject to the licensing and related regulatory authority of the Commission pursuant to Sections 202(3) and 202(4) of the Energy Reorganization Act of 1974 (88 Stat 1244).[1]

"Host rock" means the geologic medium in which the waste is emplaced.

"Important to safety," with reference to structures, systems, and components means those engineered structures, systems, and components essential to the prevention or mitigation of an accident that could result in a radiation dose to the whole body, or any organ, of 0.5 rem or greater at or beyond the nearest boundary of the unrestricted area at any time until the completion of permanent closure.

"Indian tribe" means an Indian tribe as defined in the Indian Self-Determination and Education Assistance Act (Public Law 93–638).

"Isolation" means inhibiting the transport of radioactive material so that amounts and concentrations of this material entering the accessible environment will be kept within prescribed limits.

"Permanent closure" means final backfilling of the underground facility and the sealing of shafts and boreholes.

"Performance confirmation" means the program of tests, experiments, and analyses which is conducted to evaluate the accuracy and adequacy of the information used to determine with reasonable assurance that the performance objectives for the period after permanent closure will be met.

"Public Document Room" means the place at 1717 H Street N.W., Washington, D.C., at which records of the Commission will ordinarily be made available for public inspection and any other place, the location of which has been published in the **Federal Register**, at which public records of the Commission pertaining to a particular geologic repository are made available for public inspection.

"Radioactive waste" or "waste" means HLW and other radioactive materials other than HLW that are received for emplacement in a geologic repository.

"Restricted area" means any area access to which is controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials. "Restricted area" shall not include any areas used as residential quarters, although a separate room or rooms in a residential building may be set apart as a restricted area.

"Retrieval" means the act of intentionally removing radioactive waste from the underground location at which the waste had been previously emplaced for disposal.

"Saturated zone" means that part of the earth's crust beneath the regional water table in which all voids, large and small, are ideally filled with water under pressure greater than atmospheric.

"Site" means the location of the controlled area.

"Site characterization" means the program of exploration and research, both in the laboratory and in the field, undertaken to establish the geologic conditions and the ranges of those parameters of a particular site relevant to the procedures under this part. Site characterization includes borings, surface excavations, excavation of exploratory shafts, limited subsurface lateral excavations and borings, and in situ testing at depth needed to determine the suitability of the site for a geologic repository, but does not include preliminary borings and geophysical testing needed to decide whether site characterization should be undertaken.

"Tribal organization" means a tribal organization as defined in the Indian Self-Determination and Education Assistance Act (Public Law 93–638).

"Unanticipated processes and events" means those processes and events affecting the geologic setting that are

[1] These are DOE "facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from activities licensed under such Act [the Atomic Energy Act]" and "Retrievable Surface Storage Facilities and other facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive wastes generated by [DOE], which are not used for, or are part of, research and development activities."

judged not to be reasonably likely to occur during the period the intended performance objective must be achieved, but which are nevertheless sufficiently credible to warrant consideration. Unanticipated processes and events may be either natural processes or events or processes and events initiated by human activities other than those activities licensed under this part. Processes and events initiated by human activities may only be found to be sufficiently credible to warrant consideration if it is assumed that: (1) The monuments provided for by this part are sufficiently permanent to serve their intended purpose; (2) the value to future generations of potential resources within the site can be assessed adequately under the applicable provisions of this part; (3) an understanding of the nature of radioactivity, and an appreciation of its hazards, have been retained in some functioning institutions; (4) institutions are able to assess risk and to take remedial action at a level of social organization and technological competence equivalent to, or superior to, that which was applied in initiating the processes or events concerned; and (5) relevant records are preserved, and remain accessible, for several hundred years after permanent closure. 48 FR 28194

"Underground facility" means the underground structure, including openings and backfill materials, but excluding shafts, boreholes, and their seals.

"Unrestricted area" means any area, access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials, and any area used for residential quarters.

"Unsaturated zone" means the zone between the land surface and the regional water table. Generally, fluid pressure in this zone is less than atmospheric pressure, and some of the voids may contain air or other gases at atmospheric pressure. Beneath flooded areas or in perched water bodies the fluid pressure locally may be greater than atmospheric. 50 FR 29641

"Waste form" means the radioactive waste materials and any encapsulating or stabilizing matrix.

"Waste package" means the waste form and any containers, shielding, packing and other absorbent materials immediately surrounding an individual waste container. 48 FR 28194

"Water table" means that surface in a groundwater body at which the water pressure is atmospheric.

§ 60.3 License required. 46 FR 13971

(a) DOE shall not receive or possess source, special nuclear, or byproduct material at a geologic repository operations area except as authorized by a license issued by the Commission pursuant to this part.

(b) DOE shall not commence construction of a geologic repository operations area unless it has filed an application with the Commission and has obtained construction authorization as provided in this part. Failure to comply with this requirement shall be grounds for denial of a license. 46 FR 13971

§ 60.4 Communications.

Except where otherwise specified, all communications and reports concerning the regulations in this part and applications filed under them should be addressed to the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Communications, reports, and applications may be delivered in person at the Commission's offices at 1717 H Street NW, Washington, D.C., or 7915 Eastern Avenue, Silver Spring, Maryland.

§ 60.5 Interpretations.

Except as specifically authorized by the Commission, in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be considered binding upon the Commission. 46 FR 13971

§ 60.6 Exemptions.

The Commission may, upon application by DOE, any interested person, or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law, will not endanger life or property or the common defense and security, and are otherwise in the public interest.

§ 60.7 License not required for certain preliminary activities.

The requirement for a license set forth in § 60.3(a) of this part is not applicable to the extent that DOE receives and possesses source, special nuclear, and byproduct material at a geologic repository:

(a) For purposes of site characterization; or

(b) For use, during site characterization or construction, as components of radiographic, radiation monitoring, or similar equipment or instrumentation.

§ 60.8 Reporting, recordkeeping, and application requirements: OMB approval not required.

The information collection requirements contained in this part affect fewer than ten persons. Therefore, under section 3506(c)(5) of the Paperwork Reduction Act of 1980 (Pub. L. 96–511), OMB clearance is not required for these information collection requirements. 47 FR 13774

§ 60.9 Employee protection.

(a) Discrimination by a Commission licensee, an applicant for a Commission license, or a contractor or subcontractor of a Commission licensee or applicant against an employee for engaging in certain protected activities is prohibited. Discrimination includes discharge and other actions that relate to compensation, terms, conditions, and privileges of employment. The protected activities are established in section 210 of the Energy Reorganization Act of 1974, as amended, and in general are related to the administration or enforcement of a requirement imposed under the Atomic Energy Act or the Energy Reorganization Act.

(1) The protected activities include but are not limited to—

(i) Providing the Commission information about possible violations of requirements imposed under either of the above statutes;

(ii) Requesting the Commission to institute action against his or her employer for the administration or enforcement of these requirements; or

(iii) Testifying in any Commission proceeding.

(2) These activities are protected even if no formal proceeding is actually initiated as a result of the employee assistance or participation.

(3) This section has no applicaton to any employee alleging discrimination prohibited by this section who, acting without direction from his or her employer (or the employer's agent), deliberately causes a violation of any requirement of the Energy Reorganization Act of 1974, as amended, or the Atomic Energy Act of 1954, as amended. 47 FR 30425

(b) Any employee who believes that he or she has been discharged or otherwise discriminated against by any person for engaging in the protected activities specified in paragraph (a)(1) of this section may seek a remedy for the discharge or discrimination through an administrative proceeding in the Department of Labor. The administrative proceeding must be initiated within 30 days after an alleged violation occurs by filing a complaint alleging the violation with the Department of Labor, Employment Standards Administration, Wage and Hour Division. The Department of Labor may order reinstatement, back pay, and compensatory damages.

(c) A violation of paragraph (a) of this section by a Commission licensee, an applicant for a Commission license, or a contractor or subcontractor of a Commission licensee or applicant may be grounds for—

(1) Denial, revocation, or suspension of the license.

(2) Imposition of a civil penalty on the licensee or applicant.

(3) Other enforcement action.

(d) Actions taken by an employer, or others, which adversely affect an employee may be predicated upon

47 FR 30425

nondiscriminatory grounds. The prohibition applies when the adverse action occurs because the employee has engaged in protected activities. An employee's engagement in protected activities does not automatically render him or her immune from discharge or discipline for legitimate reasons or from adverse action dictated by nonprohibited considerations.

(e) Each licensee and each applicant shall post Form NRC–3, "Notice to Employees," on its premises. Posting must be at locations sufficient to permit employees protected by this section to observe a copy on the way to or from their place of work. Premises must be posted not later than 30 days after an application is docketed and remain posted while the application is pending before the Commission, during the term of the license, and for 30 days following license termination.

47 FR 30425

Note.—Copies of Form NRC–3 may be obtained by writing to the Regional Administrator of the appropriate U.S. Nuclear Regulatory Commission Regional Office listed in Appendix D, Part 20 of this chapter or the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Subpart B—Licenses

Preapplication Review

48 FR 28194

§ 60.10 Site characterization.

(a) Prior to submittal or an application for a license to be issued under this part DOE shall conduct a program of site characterization with respect to the site to be described in such application.

46 FR 13971

(b) Unless the Commission determines with respect to the site described in the application that it is not necessary, site characterization shall include a program of in situ exploration and testing at the depths that wastes would be emplaced.

(c) As provided in § 51.40 of this chapter, DOE is also required to conduct a program of site characterization, including in situ testing at depth, with respect to alternative sites.

48 FR 28194

(d) The program of site characterization shall be conducted in accordance with the following:

(1) Investigations to obtain the required information shall be conducted in such a manner as to limit adverse effects on the long-term performance of the geologic repository to the extent practical.

(2) The number of exploratory boreholes and shafts shall be limited to the extent practical consistent with obtaining the information needed for site characterization.

(3) To the extent practical, exploratory boreholes and shafts in the geologic repository operations area shall be located where shafts are planned for underground facility construction and operation or where large unexcavated pillars are planned.

(4) Subsurface exploratory drilling, excavation, and in situ testing before and during construction shall be planned and coordinated with geologic repository operations area design and construction.

§ 60.11 Site characterization report.

48 FR 28194

(a) As early as possible after commencement of planning for a particular geologic repository operations area, and prior to site characterization, DOE shall submit to the Director a Site Characterization Report. The report shall include [1]: (1) A description of the site to be characterized; (2) the criteria used to arrive at the candidate area; (3) the method by which the site was selected for site characterization; (4) identification and location of alternative media and sites at which DOE intends to conduct site characterization and for which DOE anticipates submitting subsequent Site Characterization Reports; (5) a description of the decision process by which the site was selected for characterization, including the means used to obtain public, Indian tribal and State views during selection; (6) a description of the site characterization program including: (i) The extent of planned excavation and plans for in situ testing, (ii) a conceptual design of a geologic repository operations area appropriate to the named site in sufficient detail to allow assessment of the site characterization program, with respect to investigation activities which address the ability of the site to host a geologic repository and isolate radioactive waste, or which may affect such ability, and (iii) provisions to control any adverse, safety-related effects from site characterization, including appropriate quality programs; (7) a description of the quality assurance program to be applied to data collection; and (8) any issues related to site selection, alternative candidate areas, or other sites, or design of the geologic repository operations area which the DOE wishes the Commission to review. Also included shall be a description of the research and development activities being conducted by DOE which deal with the waste form and packaging which may be considered appropriate for the site to be characterized, including research planned or underway to evaluate the performance of such waste forms and packaging.

46 FR 13971

(b) The Director shall cause to be published in the **Federal Register** a notice that the information submitted under paragraph (a) of this section has been received and that a staff review of that information has begun. The notice shall identify the site selected for site characterization and alternate areas being considered by DOE and shall advise that consultation may be requested by State and local governments and Tribal organizations in accordance with Subpart C of this part.

[1] To the extent that the information indicated in items 2 through 5 appears in an Environmental Impact Statement prepared by DOE for site characterization at the named site, it may be incorporated into DOE's Site Characterization Report by reference.

(c) The Director shall make available a copy of the above information at the Public Document Room. The Director also shall transmit copies and the published notice of receipt thereof to the Governor and legislature of the State and to the chief executive of the municipality in which a site to be characterized is located (or if it is not located within a municipality, then to the chief executive of the county, or to the Tribal organization if it is to be located within an Indian reservation) and to the Governors of any contiguous States.

(d) The Director shall prepare a draft site characterization analysis which shall discuss the items cited in paragraph (a) of this section. The Director shall publish a notice of availability of the draft site characterization analysis and a request for comment in the **Federal Register.** Copies shall be made available at the Public Document Room. The Director shall also transmit copies to the Governor and legislature of the State and the chief executive of the municipality in which a site to be characterized is located (or if it is not located within a municipality, then to the chief executive of the county, or to the Tribal organization if it is to be located within an Indian reservation) and to the Governors of any contiguous States.

(e) A reasonable period, not less than 90 days, shall be allowed for comment on the draft site characterization analysis. The Director shall then prepare a final site characterization analysis which shall take into account comments received and any additional information acquired during the comment period. Included in the final site characterization analysis shall be either an opinion by the Director that he has no objection to the DOE's site characterization program, if such an opinion is appropriate, or specific objections of the Director to DOE's proceeding with characterization of the named site. In addition, the Director may make specific recommendations to DOE on the matters pertinent to this section. A copy of the final site characterization analysis and the Director's opinion will be transmitted to DOE.

46 FR 13971

(f) Neither issuance of a final site characterization analysis nor the opinion by the Director shall constitute a commitment to issue any authorization or license or in any way affect the authority of the Commission, the Atomic Safety and Licensing Appeal Board, Atomic Safety and Licensing Boards, other presiding officers, or the Director, in any proceeding under Subpart G of Part 2 of this chapter. If DOE prepares an Environmental Impact Statement

with respect to site characterization activities proposed for a particular site, it should consider NRC's site characterization analyses before publishing its final Environmental Impact Statement with respect to site characterization activities proposed for that particular site.

(g) During site characterization, DOE shall inform the Director by semiannual report and by other reports on any topic related to site characterization if requested by the Director, of the progress of the site characterization and waste form and packaging research and development. The semiannual reports should include the results of site characterization studies, the identification of new issues, plans for additional studies to resolve new issues, elimination of planned studies no longer necessary, identification of decision points reached and modification to schedules were appropriate. Also reported should be the DOE's progress in developing the design of a geologic repository operations area appropriate for the site being characterized, noting when key design parameters or features which depend upon the results of site characterization will be established. During this time, NRC staff shall be permitted to visit and inspect the site and observe excavations, borings, and in situ tests as they are done. 46 FR 13971

(h) The Director may comment at any time in writing to DOE, expressing current views on any aspect of site characterization. Comments received from States in accordance with § 60.61 shall be considered by the Director in formulating his views. All correspondence between DOE and the NCR including the reports cited in paragraph (g) shall be placed in the Public Document Room.

(i) The activities described in paragraphs (a) through (h) above constitute informal conference between a prospective applicant and the staff, as described in § 2.101(a)(1) of this chapter, and are not part of a proceeding under the Atomic Energy Act of 1954, as amended.

License Applications

§ 60.21 Content of application.

(a) An application shall consist of general information and a Safety Analysis Report. An environmental report shall be prepared in accordance with Part 51 of this chapter and shall accompany the application. Any Restricted Data or National Security Information shall be separated from unclassified information.

(b) The general information shall include:

(1) A general description of the proposed geologic repository identifying the location of the geologic repository operations area, the general character of the proposed activities, and the basis for the exercise of licensing authority by the Commission.

(2) Proposed schedules for construction, receipt of waste, and emplacement of wastes at the proposed geologic repository operations area.

(3) A certification that DOE will provide at the geologic repository operations area such safeguards as it requires at comparable surface facilities (of DOE) to promote the common defense and security.

(4) A description of the physical security plan for protection against radiological sabotage. Since the radiation hazards associated with high-level wastes make them inherently unattractive as a target for theft or diversion, no detailed information need be submitted on protection against theft or diversion. 46 FR 13971

(5) A description of site characterization work actually conducted by DOE at all sites considered in the application and, as appropriate, explanations of why such work differed from the description of the site characterization program described in the Site Characterization Report for each site.

(c) The Safety Analysis Report shall include:

(1) A description and assessment of the site at which the proposed geologic repository operations area is to be located with appropriate attention to those features of the site that might affect geologic repository operations area design and performance. The description of the site shall identify the location of the geologic repository operations area with respect to the boundary of the accessible environment. 48 FR 28194

(i) The description of the site shall also include the following information regarding subsurface conditions. This description shall, in all cases, include such information with respect to the controlled area. In addition, where subsurface conditions outside the controlled area may affect isolation within the controlled area, the description shall include such information with respect to subsurface conditions outside the controlled area to the extent such information is relevant and material. The detailed information referred to in this paragraph shall include—

(A) The orientation, distribution, aperture in-filling and origin of fractures, discontinuities, and heterogeneities;

(B) The presence and characteristics of other potential pathways such as solution features, breccia pipes, or other potentially permeable features;

(C) The geomechanical properties and conditions, including pore pressure and ambient stress conditions;

(D) The hydrogeologic properties and conditions;

(E) The geochemical properties; and

(F) The anticipated response of the geomechanical, hydrogeologic, and geochemical systems to the maximum design thermal loading, given the pattern of fractures and other discontinuities and the heat transfer properties of the rock mass and groundwater.

(ii) The assessment shall contain—

(A) An analysis of the geology, geophysics, hydrogeology, geochemistry, climatology, and meteorology of the site,

(B) Analyses to determine the degree to which each of the favorable and potentially adverse conditions, if present, has been characterized, and the extent to which it contributes to or detracts from isolation. For the purpose of determining the presence of the potentially adverse conditions, investigations shall extend from the surface to a depth sufficient to determine critical pathways for radionuclide migration from the underground facility to the accessible environment. Potentially adverse conditions shall be investigated outside of the controlled area if they affect isolation within the controlled area.

(C) An evaluation of the performance of the proposed geologic repository for the period after permanent closure, assuming anticipated processes and events, giving the rates and quantities of releases of radionuclides to the accessible environment as a function of time; and a similar evaluation which assumes the occurrence of unanticipated processes and events.

(D) The effectiveness of engineered and natural barriers, including barriers that may not be themselves a part of the geologic repository operations area, against the release of radioactive material to the environment. The analysis shall also include a comparative evaluation of alternatives to the major design features that are important to waste isolation, with particular attention to the alternatives that would provide longer radionuclide containment and isolation. 48 FR 28194

(E) An analysis of the performance of the major design structures, systems, and components, both surface and subsurface, to identify those that are important to safety. For the purposes of this analysis, it shall be assumed that operations at the geologic repository operations area will be carried out at the maximum capacity and rate of receipt of radioactive waste stated in the application.

(F) An explanation of measures used to support the models used to perform the assessments required in paragraphs (A) through (D). Analyses and models

that will be used to predict future conditions and changes in the geologic setting shall be supported by using an appropriate combination of such methods as field tests, in situ tests, laboratory tests which are representative of field conditions, monitoring data, and natural analog studies. [48 FR 28194]

(2) A description and discussion of the design, both surface and subsurface, of the geologic repository operations area including: (i) the principal design criteria and their relationship to any general performance objectives promulgated by the Commission, (ii) the design bases and the relation of the design bases to the principal design criteria, (iii) information relative to materials of construction (including geologic media, general arrangement, and approximate dimensions), and (iv) codes and standards that DOE proposes to apply to the design and construction of the geologic repository operations area. [46 FR 13971]

(3) A description and analysis of the design and performance requirements for structures, systems, and components of the geologic repository which are important to safety. This analysis shall consider—(i) The margins of safety under normal conditions and under conditions that may result from anticipated operational occurrences, including those of natural origin; and (ii) the adequacy of structures, systems, and components provided for the prevention of accidents and mitigation of the consequences of accidents, including those caused by natural phenomena. [48 FR 28194]

(4) A description of the quality assurance program to be applied to the structures, systems, and components important to safety and to the engineered and natural barriers important to waste isolation.

(5) A description of the kind, amount, and specifications of the radioactive material proposed to be received and possessed at the geologic repository operations area. [46 FR 13971]

(6) An identification and justification for the selection of those variables, conditions, or other items which are determined to be probable subjects of license specifications. Special attention shall be given to those items that may significantly influence the final design.

(7) A description of the program for control and monitoring of radioactive effluents and occupational radiation exposures to maintain such effluents and exposures in accordance with the requirements of Part 20 of this chapter.

(8) A description of the controls that the applicant will apply to restrict access and to regulate land use at the site and adjacent areas, including a conceptual design of monuments which would be used to identify the controlled area after permanent closure. [48 FR 28194]

(9) Plans for coping with radiological emergencies at any time prior to permanent closure and decontamination or dismantlement of surface facilities. [48 FR 28194]

(10) A description of the nuclear material control and accounting program. [46 FR 13971]

(11) A description of design considerations that are intended to facilitate permanent closure and decontamination or dismantlement of surface facilities. [46 FR 28194]

(12) A description of plans for retrieval and alternate storage of the radioactive wastes should the geologic repository prove to be unsuitable for disposal of radioactive wastes. [46 FR 13971]

(13) An identification and evaluation of the natural resources of the geologic setting, including estimates as to undiscovered deposits, the exploitation of which could affect the ability of the geologic repository to isolate radioactive wastes. Undiscovered deposits of resources characteristic of the area shall be estimated by reasonable inference based on geological and geophysical evidence. This evaluation of resources, including undiscoverd deposits, shall be conducted for the site and for areas of similar size that are representative of and are within the geologic setting. For natural resources with current markets the resources shall be assessed, with estimates provided of both gross and net value. The estimate of net value shall take into account current development, extraction and marketing costs. For natural resources without current markets, but which would be marketable given credible projected changes in economic or technological factors, the resources shall be described by physical factors such as tonnage or other amount, grade, and quality. [48 FR 28194]

(14) An identification of those structures, systems, and components of the geologic repository, both surface and subsurface, which require research and development to confirm the adequacy of design. For structures, systems, and components important to safety and for the engineered and natural barriers important to waste isolation, DOE shall provide a detailed description of the programs designed to resolve safety questions, including a schedule indicating when these questions would be resolved.

(15) The following information concerning activities at the geologic repository operations area:

(i) The organizational structure of DOE as it pertains to construction and operation of the geologic repository operations area including a description of any delegations of authority and assignments of responsibilities, whether in the form of regulations, administrative directives, contract provisions, or otherwise.

(ii) Identification of key positions which are assigned responsibility for safety at and operation of the geologic repository operations area.

(iii) Personnel qualifications and training requirements.

(iv) Plans for startup activities and startup testing.

(v) Plans for conduct of normal activities, including maintenance, surveillance, and periodic testing of structures, systems, and components of the geologic repository operation area.

(iv) Plans for permanent closure and plans for the decontamination or dismantlement of surface facilities.

(vii) Plans for any uses of the geologic repository operations area for purposes other than disposal of radioactive wastes, with an analysis of the effects, if any, that such uses may have upon the operation of the structures, systems, and components important to safety and the engineered and natural barriers important to waste isolation. [48 FR 28194]

§ 60.22 Filing and distribution of application.

(a) An application for a license to receive and possess source, special nuclear, or byproduct material at a geologic repository operations area at a site which has been characterized, and an accompanying environmental report, and any amendments thereto, shall be filed in triplicate with the Director and shall be signed by the Secretary of Energy or the Secretary's authorized representative.

(b) Each portion of such application and environmental report and any amendments shall be accompanied by 30 additional copies. Another 120 copies shall be retained by DOE for distribution in accordance with written instructions from the Director or the Director's designee. [46 FR 13971]

(c) DOE shall, upon notification of the appointment of an Atomic Safety and Licensing Board, update the application and environmental report, eliminating all superseded information, and serve them as directed by the Board. In addition, at that time DOE shall serve one such copy on the Atomic Safety and Licensing Appeal Panel. Any subsequent amendments to the application or environmental report shall be served in the same manner.

(d) At the time of filing of an application and environmental report, and any amendments thereto, one copy shall be made available in an appropriate location near the proposed geologic repository operations area (which shall be a public document room, if one has been established) for inspection by the public and updated as amendments to the application or [48 FR 28194]

environmental report are made. An updated copy shall be produced at any public hearing on the application for use by any parties to the proceedings.

(e) The DOE shall certify that the updated copies of the application and environmental report, as referred to in paragraphs (c) and (d), contain the current contents of such documents submitted in accordance with the requirements of this part.

§ 60.23 Elimination of repetition.

In its application, environmental report, or Site Characterization Report, the DOE may incorporate by reference information contained in previous applications, statements, or reports filed with the Commission: PROVIDED, that such references are clear and specific and that copies of the information so incorporated are available in the public document room located near the site of the proposed geologic repository.

§ 60.24 Updating of application and environmental report.

(a) The application and environmental report shall be as complete as possible in the light of information that is reasonably available at the time of docketing.

(b) The DOE shall update its application in a timely manner so as to permit the Commission to review, prior to issuance of a license:

(1) Additional geologic, geophysical, geochemical, hydrologic, meteorologic and other data obtained during construction.

(2) Conformance of construction of structures, systems, and components with the design.

(3) Results of research programs carried out to confirm the adequacy of designs.

(4) Other information bearing on the Commission's issuance of a license that was not available at the time a construction authorization was issued.

(c) The DOE shall update its environmental report in a timely manner so as to permit the Commission to review, prior to issuance of a license, the environmental impacts of any substantial changes in the activities proposed to be carried out or any significant new information regarding the environmental impacts of activities previously proposed.

Construction Authorization

§ 60.31 Construction authorization.

Upon review and consideration of an application and environmental report submitted under this part, the Commission may authorize construction if it determines:

(a) *Safety.* That there is reasonable assurance that the types and amounts of radioactive materials described in the application can be received, possessed, and disposed of in a geologic repository operations area of the design proposed without unreasonable risk to the health and safety of the public. In arriving at this determination, the Commission shall consider whether:

(1) DOE has described the proposed geologic repository including but not limited to: (i) The geologic, geophysical, geochemical and hydrologic characteristics of the site; (ii) the kinds and quantities of radioactive waste to be received, possessed, stored, and disposed of in the geologic repository operations area; (iii) the principal architectural and engineering criteria for the design of the geologic repository operations area; (iv) construction procedures which may affect the capability of the geologic repository to serve its intended function; and (v) features or components incorporated in the design for the protection of the health and safety of the public.

(2) The site and design comply with the performance objectives and criteria contained in Subpart E of this part.

(3) The DOE's quality assurance program complies with the requirements of Subpart G of this part.

(4) The DOE's personnel training program complies with the criteria contained in Subpart H of this part.

(5) The DOE's emergency plan complies with the criteria contained in Subpart I of this part.

(6) The DOE's proposed operating procedures to protect health and to minimize danger to life or property are adequate.

(b) *Common defense and security.* That there is reasonable assurance that the activities proposed in the application will not be inimical to the common defense and security. A DOE certification that it will provide at the geologic repository operations area such safeguards as it requires at comparable DOE surface facilities to promote the common defense and security will constitute a rebuttable presumption of noninimicality to the common defense and security.

(c) *Environmental.* That, after weighing the environmental, economic, technical and other benefits against environmental costs and considering available alternatives, the action called for is issuance of the construction authorization, with any appropriate conditions to protect environmental values.

§ 60.32 Conditions of construction authorization.

(a) A construction authorization shall include such conditions as the Commission finds to be necessary to protect the health and safety of the public, the common defense and security, or environmental values.

(b) The Commission will incorporate in the construction authorization provisions requiring DOE to furnish periodic or special reports regarding: (1) Progress of construction, (2) any data about the site obtained during construction which are not within the predicted limits upon which the facility design was based, (3) any deficiencies in design and construction which, if uncorrected, could adversely affect safety at any future time, and (4) results of research and development programs being conducted to resolve safety questions.

(c) The construction authorization will include restrictions on subsequent changes to the features of the geologic repository and the procedures authorized. The restrictions that may be imposed under this paragraph can include measures to prevent adverse effects on the geologic setting as well as measures related to the design and construction of the geologic repository operations area. These restrictions will fall into three categories of descending importance to public health and safety as follows: (1) Those features and procedures which may not be changed without: (i) 60 days prior notice to the Commission (ii) 30 days notice of opportunity for a prior hearing, and (iii) prior Commission approval; (2) those features and procedures which may not be changed without (i) 60 days prior notice to the Commission, and (ii) prior Commission approval; and (3) those features and procedures which may not be changed without 60 days notice to the Commission. Features and procedures falling in paragraph (c)(3) of this section may not be changed without prior Commission approval if the Commission, after having received the required notice, so orders.

(d) A construction authorization shall be subject to the limitation that a license to receive and possess source, special nuclear, or byproduct material at the geologic repository operations area shall not be issued by the Commission until (1) the DOE has updated its application as specified in § 60.24, and (2) the Commission has made the findings stated in § 60.41.

§ 60.33 Amendment of construction authorization.

(a) An application for amendment of a construction authorization shall be filed with the Commission fully describing any changes desired and following as far as applicable the format prescribed in § 60.21.

(b) In determining whether an amendment of a construction authorization will be approved, the Commission will be guided by the considerations which govern the issuance of the initial construction authorization, to the extent applicable.

License Issuance and Amendment

§ 60.41 Standards for issuance of a license.

A license to receive and possess source, special nuclear, or byproduct material at a geologic repository operations area may be issued by the Commission upon finding that:

(a) Construction of the geologic repository operations area has been substantially completed in conformity with the application as amended, the provisions of the Atomic Energy Act, and the rules and regulations of the Commission. Construction may be deemed to be substantially complete for the purposes of this paragraph if the construction of (1) surface and interconnecting structures, systems, and components, and (2) any underground storage space required for initial operation are substantially complete.

(b) The activities to be conducted at the geologic repository operations area will be in conformity with the application as amended, the provisions of the Atomic Energy Act and the Energy Reorganization Act, and the rules and regulations of the Commission.

(c) The issuance of the license will not be inimical to the common defense and security and will not constitute an unreasonable risk to the health and safety of the public. A DOE certification that it will provide at the geologic repository operations area such safeguards as it requires at comparable DOE facilities to promote the common defense and security, will constitute a rebuttable presumption of non-inimicality to the common defense and security.

(d) All applicable requirements of Part 51 have been satisfied.

§ 60.42 Conditions of license.

(a) A license issued pursuant to this part shall include such conditions, including license specifications, as the Commission finds to be necessary to protect the health and safety of the

46 FR 13971

public, the common defense and security, and environmental values.

(b) Whether stated therein or not, the following shall be deemed conditions in every license issued:

(1) The license shall be subject to revocation, suspension, modification, or amendment for cause as provided by the Atomic Energy Act and the Commission's regulations.

(2) The DOE shall at any time while the license is in effect, upon written request of the Commission, submit written statements to enable the Commission to determine whether or not the license should be modified, suspended or revoked.

(3) The license shall be subject to the provisions of the Atomic Energy Act now or hereafter in effect and to all rules, regulations, and orders of the Commission. The terms and conditions of the license shall be subject to amendment, revision, or modification, by reason of amendments to or by reason of rules, regulations, and orders issued in accordance with the terms of the Atomic Energy Act.

(c) Each license shall be deemed to contain the provisions set forth in Section 183 b-d, inclusive, of the Atomic Energy Act, whether or not these provisions are expressly set forth in the license.

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§ 60.43 License specifications.

(a) A license issued under this part shall include license conditions derived from the analyses and evaluations included in the application, including amendments made before a license is issued, together with such additional conditions as the Commission finds appropriate.

(b) License conditions shall include items in the following categories—

(1) Restrictions as to the physical and chemical form and radioisotopic content of radioactive waste.

(2) Restrictions as to size, shape, and materials and methods of construction of radioactive waste packaging.

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(3) Restrictions as to the amount of waste permitted per unit volume of storage space considering the physical characteristics of both the waste and the host rock.

(4) Requirements relating to test, calibration, or inspection to assure that the foregoing restrictions are observed.

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(5) Controls to be applied to restricted access and to avoid disturbance to the controlled area and to areas outside the controlled area where conditions may affect isolation within the controlled area.

(6) Administrative controls, which are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure that activities at the facility are conducted in a safe manner and in conformity with the other license specifications.

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§ 60.44 Changes, tests, and experiments.

(a)(1) Following authorization to receive and possess source, special nuclear, or byproduct material at a geologic repository operations area, the DOE may (i) make changes in the geologic repository operations area as described in the application, (ii) make changes in the procedures as described in the application, and (iii) conduct tests or experiments not described in the application, without prior Commission approval, provided the change, test, or experiment involves neither a change in the license conditions incorporated in the license nor an unreviewed safety question.

(2) A proposed change, test, or experiment shall be deemed to involve an unreviewed safety question if (i) the likelihood of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the application is increased, (ii) the possibility of an accident or malfunction of a different type than any previously evaluated in the application is created, or (iii) the margin of safety as defined in the basis for any license condition is reduced.

(b) The DOE shall maintain records of changes in the geologic repository operations area and of changes in procedures made pursuant to this section, to the extent that such changes constitute changes in the geologic repository operations area or procedures as described in the application. Records of tests and experiments carried out pursuant to paragraph (a) of this section shall also be maintained. These records shall include a written safety evaluation which provides the basis for the determination that the change, test, or experiment does not involve an unreviewed safety question. The DOE shall prepare annually, or at such shorter intervals as may be specified in the license, a report containing a brief description of such changes, tests, and experiments, including a summary of the safety evaluation of each. The DOE shall furnish the report to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter with a copy to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Any report submitted pursuant to this paragraph shall be made a part of the public record of the licensing proceedings.

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§ 60.45 Amendment of license.

(a) An application for amendment of a license may be filed with the Commission fully describing the changes desired and following as far as applicable the format prescribed for license applications.

(b) In determining whether an amendment of a license will be approved, the Commission will be guided by the considerations that govern the issuance of the initial license, to the extent applicable.

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§ 60.46 Particular activities requiring license amendment.

(a) Unless expressly authorized in the license, an amendment of the license shall be required with respect to any of the following activities—

(1) Any action which would make emplaced high-level radioactive waste irretrievable or which would substantially increase the difficulty of retrieving such emplaced waste.

(2) Dismantling of structures.

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(3) Removal or reduction of controls applied to restrict access to or avoid disturbance of the controlled area and to areas outside the controlled area where conditions may affect isolation within the controlled area.

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(4) Destruction or disposal of records required to be maintained under the provisions of this part.

(5) Any substantial change to the design or operating procedures from that specified in the license.

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(6) Permanent closure.

(7) Any other activity involving an unreviewed safety question.

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(b) An application for such an amendment shall be filed, and shall be reviewed, in accordance with the provisions of § 60.45.

Permanent Closure

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§ 60.51 License amendment for permanent closure.

(a) DOE shall submit an application to amend the license prior to permanent closure. The application shall consist of an update of the license application and environmental report submitted under §§60.21 and 60.22, including:

(1) A description of the program for post-permanent closure monitoring of the geologic repository.

(2) A detailed description of the measures to be employed—such as land use controls, construction of monuments, and preservation of records—to regulate or prevent activities that could impair the long-term isolation of emplaced waste within the geologic repository and to assure that relevant information will be preserved for the use of future generations. As a minimum, such measures shall include—

(i) Identification of the controlled area and geologic repository operations area by monuments that have been designed, fabricated, and emplaced to be as permanent as is practicable; and

(ii) Placement of records in the archives and land record systems of local State, and Federal government agencies, and archives elsewhere in the world, that would be likely to be consulted by potential human intruders—such records to identify the location of the geologic repository operations area, including the underground facility, boreholes and shafts, and the boundaries of the controlled area, and the nature and hazard of the waste.

(3) Geologic, geophysical, geochemical, hydrologic, and other site data that are obtained during the operational period pertinent to the long-term isolation of emplaced radioactive wastes.

(4) The results of tests, experiments, and any other analyses relating to backfill of excavated areas, shaft sealing, waste interaction with the host rock, and any other tests, experiments, or analyses pertinent to the long-term isolation of emplaced wastes within the geologic repository.

(5) Any substantial revision of plans for permanent closure.

(6) Other information bearing upon permanent closure that was not available at the time a license was issued.

(b) DOE shall update its environmental report in a timely manner so as to permit the Commission to review, prior to issuance of an amendment, substantial changes in the permanent closure activities proposed to be carried out or significant new information regarding the environmental impacts of such permanent closure.

§ 60.52 Termination of license.

(a) Following permanent closure and the decontamination or dismantlement of surface facilities, DOE may apply for an amendment to terminate the license.

(b) Such application shall be filed, and will be reviewed, in accordance with the provisions of § 60.45 and this section.

(c) A license shall be terminated only when the Commission finds with respect to the geologic repository:

(1) That the final disposition of radioactive wastes has been made in conformance with the DOE's plan, as amended and approved as part of the license.

(2) That the final state of the geologic repository operations area conforms to DOE's plans for permanent closure and DOE's plans for the decontamination or dismantlement of surface facilities, as amended and approved as part of the license.

(3) That the termination of the license is authorized by law, including Sections 57, 62, and 81 of the Atomic Energy Act, as amended.

Subpart C—Participation by State Governments and Indian Tribes

§ 60.61 Site review.

(a) Upon publication in the **Federal Register** of a notice that the DOE has selected a site for site characterization, in accordance with § 60.11(b), and upon the request of a State, the Director shall make available NRC staff to consult with representatives of State, Indian tribal and local governments to keep them informed of the Director's view on the progress of site characterization and to notify them of any subsequent meetings or further consultations with the DOE.

(b) Requests for consultation shall be made in writing to the Director.

(c) The Director also shall respond to written questions or comments from the State, Indian tribal and local governments as appropriate, on the information submitted by the DOE in accordance with § 60.11 of this part. Copies of such questions or comments and their responses shall be made available in the Public Document Room and shall be transmitted to the DOE.

§ 60.62 Filing of proposals for State participation.

(a) Consultation under § 60.61 may include, among other things, a review of applicable NRC regulations, licensing procedures, potential schedules, and the type and scope of State activities in the license review permitted by law. In addition, staff shall be made available to cooperate with the State in developing proposals for participation by the State.

(b) States potentially affected by siting of a geologic repository operations area at a site that has been selected for characterization may submit to the Director a proposal for State participation in the review of the Site Characterization Report and/or license application. A State's proposal to participate may be submitted at any time prior to docketing of an application or up to 120 days thereafter.

(c) Proposals for participation in the review shall be signed by the Governor of the State submitting the proposal and shall at a minimum contain the following information:

(1) A general description of how the State wishes to participate in the review, specifically identifying those issues which it wishes to review.

(2) A description of material and information which the State plans to submit to the NRC staff for consideration in the review. A tentative schedule referencing steps in the review and calendar dates for planned submittals should be included.

(3) A description including funding estimates of any work that the State proposes to perform for the Commission under contract, in support of the review.

(4) A description of State plans to facilitate local government and citizen participation.

(5) A preliminary estimate of the types and extent of impacts which the State expects should a geologic repository be located at the site in question.

(d) If the State desires educational or information services (seminars, public meetings) or other actions on the part of NRC, such as establishing additional public document rooms or employment or exchange of State personnel under the Intergovernmental Personnel Act, these shall be included with the proposal.

§ 60.63 Approval of proposals.

(a) The Director, shall arrange for a meeting between the representatives of the State and the NRC staff to discuss any proposal submitted under § 60.62(b), with a view to identifying any modifications that may contribute to the effective participation by the State.

(b) Subject to the availability of funds, the Director shall approve all or any part of a proposal, as it may be modified through the meeting described above, if it is determined that:

(1) The proposed activities are suitable in light of the type and magnitude of impacts which the State may bear, and

(2) The proposed activities (i) will enhance communications between NRC and the State, (ii) will contribute productively to the license review, and (iii) are authorized by law.

(c) The decision of the Director shall be transmitted in writing to the Governor of the originating State. A copy of the decision shall be made available at the Public Document Room. If all or any part of a proposal is rejected, the decision shall state the reason for the rejection.

(d) A copy of all proposals received shall be made available at the Public Document Room.

§ 60.64 Participation by Indian tribes.

(a) Any Indian tribe which is potentially affected by siting of a geologic repository operations area at a site that has been selected for characterization may:

(1) Request consultation, as provided with respect to States under § 60.61.

(2) Submit proposals for participation, as provided with respect to States under § 60.62, except that such proposals shall be signed by the chief executive (or other specifically authorized representative) of the Tribal organization.

(b) The Director shall respond to such requests or proposals in the manner provided in this subpart, except that decisions under § 60.63 shall be transmitted in writing to the chief executive (or other specifically authorized representative) of the Tribal organization.

(c) Any request or proposal under this section shall be accompanied by such documentation as may be needed to determine the eligibility of the Indian tribe or the specific authority of its representatives.

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§ 60.65 Coordination.

The Director may take into account the desirability of avoiding duplication of effort in taking action on multiple proposals submitted pursuant to the provisions of this Subpart to the extent this can be accomplished without substantial prejudice to the parties concerned.

Subpart D—Records, Reports, Tests, and Inspections

§ 60.71 General recordkeeping and reporting requirements.

(a) DOE shall maintain such records and make such reports in connection with the licensed activity as may be required by the conditions of the license or by rules, regulations, and orders of the Commission as authorized by the Atomic Energy Act and the Energy Reorganization Act.

(b) Records of the receipt, handling, and disposition of radioactive waste at a geologic repository operations area shall contain sufficient information to provide a complete history of the movement of the waste from the shipper through all phases of storage and disposal.

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§ 60.72 Construction records.

(a) DOE shall maintain records of construction of the geologic repository operations area.

(b) The records required under paragraph (a) shall include at least the following—

(1) Surveys of the underground facility excavations, shafts, and boreholes referenced to readily identifiable surface features or monuments;

(2) A description of the materials encountered;

(3) Geologic maps and geologic cross sections;

(4) Locations and amount of seepage;

(5) Details of equipment, methods, progress, and sequence of work;

(6) Construction problems;

(7) Anomalous conditions encountered;

(8) Instrument locations, readings, and analysis;

(9) Location and description of structural support systems;

(10) Location and description of dewatering systems; and

(11) Details, methods of emplacement, and location of seals used.

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§ 60.73 Reports of deficiencies.

DOE shall promptly notify the Commission of each deficiency found in the characteristics of the site, and design and construction of the geologic repository operations area which, were it to remain uncorrected, could: (a) Be a substantial safety hazard, (b) represent a significant deviation from the design criteria and design bases stated in the application, or (c) represent a deviation from the conditions stated in the terms of a construction authorization or the license, including license specifications. The notification shall be in the form of a written report, copies of which shall be sent to the Director and to the appropriate Nuclear Regulatory Commission Regional Office listed in Appendix D of Part 20 of this chapter.

§ 60.74 Tests.

(a) DOE shall perform, or permit the Commission to perform, such tests as the Commission deems appropriate or necessary for the administration of the regulations in this part. These may include tests of: (1) Radioactive waste, (2) the geologic repository including its structures, systems, and components, (3) radiation detection and monitoring instruments, and (4) other equipment and devices used in connection with the receipt, handling, or storage of radioactive waste.

(b) The tests required under this section shall include a performance confirmation program carried out in accordance with Subpart F of this part.

§ 60.75 Inspections.

(a) DOE shall allow the Commission to inspect the premises of the geologic repository operations area and adjacent areas to which DOE has rights of access.

(b) DOE shall make available to the Commission for inspection, upon reasonable notice, records kept by DOE pertaining to activities under this part.

(c)(1) DOE shall upon requests by the Director, Office of Inspection and Enforcement, provide rent-free office space for the exclusive use of the Commission inspection personnel. Heat, air-conditioning, light, electrical outlets and janitorial services shall be furnished by DOE. The office shall be convenient to and have full access to the facility and shall provide the inspector both visual and acoustic privacy.

(2) The space provided shall be adequate to accommodate a full-time inspector, a part-time secretary and transient NRC personnel and will be generally commensurate with other office facilities at the geologic repository operations area. A space of 250 square feet either within the geologic repository operations area's office complex or in an office trailer or other onsite space at the geologic repository operations area is suggested as a guide. For locations at which activities are carried out under licenses issued under other parts of this chapter, additional space may be requested to accomodate additional full-time inspectors. The Office space that is provided shall be subject to the approval of the Director, Office of Inspection and Enforcement. All furniture, supplies and communication equipment will be furnished by the Commission.

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(3) DOE shall afford any NRC resident inspector assigned to that location, or other NRC inspectors identified by the Regional Administrator as likely to inspect the facility, immediate unfettered access, equivalent to access provided regular employees, following proper identification and compliance with applicable access control measures for security, radiological protection and personal safety.

Subpart E—Technical Criteria

§ 60.101 Purpose and nature of findings.

(a)(1) Subpart B of this part prescribes the standards for issuance of a license to receive and possess source, special nuclear, or byproduct material at a geologic repository operations area. In particular, § 60.41(c) requires a finding that the issuance of a license will not constitute an unreasonable risk to the health and safety of the public. The purpose of this subpart is to set out performance objectives and site and design criteria which, if satisfied, will support such a finding of no unreasonable risk.

(2) While these performance objectives and criteria are generally stated in unqualified terms, it is not expected that complete assurance that they will be met can be presented. A

reasonable assurance, on the basis of the record before the Commission, that the objectives and criteria will be met is the general standard that is required. For § 60.112, and other portions of this subpart that impose objectives and criteria for repository performance over long times into the future, there will inevitably be greater uncertainties. Proof of the future performance of engineered barrier systems and the geologic setting over time periods of many hundreds or many thousands of years is not to be had in the ordinary sense of the word. For such long-term objectives and criteria, what is required is reasonable assurance, making allowance for the time period, hazards, and uncertainties involved, that the outcome will be in conformance with those objectives and criteria. Demonstration of compliance with such objectives and criteria will involve the use of data from accelerated tests and predictive models that are supported by such measures as field and laboratory tests, monitoring data and natural analog studies.

(b) Subpart B of this part also lists findings that must be made in support of an authorization to construct a geologic repository operations area. In particular, § 60.31(a) requires a finding that there is reasonable assurance that the types and amounts of radioactive materials described in the application can be received, possessed, and disposed of in a geologic repository operations area of the design proposed without unreasonable risk to the health and safety of the public. As stated in that paragraph, in arriving at this determination, the Commission will consider whether the site and design comply with the criteria contained in this subpart. Once again, while the criteria may be written in unqualified terms, the demonstration of compliance may take uncertainties and gaps in knowledge into account, provided that the Commission can make the specified finding of reasonable assurance as specified in paragraph (a) of this section.

§ 60.102 Concepts.

This section provides a functional overview of Subpart E. In the event of any inconsistency with definitions found in § 60.2, those definitions shall prevail.

(a) *The HLW facility.* NRC exercises licensing and related regulatory authority over those facilities described in section 202 (3) and (4) of the Energy Reorganization Act of 1974. Any of these facilities is designated a *HLW facility.*

(b) *The geologic repository operations area.* (1) This part deals with the exercise of authority with respect to a particular class of HLW facility—namely a *geologic repository operations area.*

(2) *A geologic repository operations area* consists of those surface and subsurface areas that are part of a geologic repository where radioactive waste handling activities are conducted. The underground structure, including openings and backfill materials, but excluding shafts, boreholes, and their seals, is designated the *underground facility.*

(3) The exercise of Commission authority requires that the geologic repository operations area be used for *storage* (which includes *disposal*) of *high-level radioactive wastes (HLW).*

(4) HLW includes irradiated reactor fuel as well as reprocessing wastes. However, if DOE proposes to use the geologic repository operations area for storage of *radioactive waste* other than HLW, the storage of this radioactive waste is subject to the requirements of this part.

(c) *Areas related to isolation.* Although the activities subject to regulation under this part are those to be carried out at the geologic repository operations area, the licensing process also considers characteristics of adjacent areas that are defined in other ways. There is to be an area surrounding the underground facility referred to above, which is designated the *controlled area,* within which DOE is to exercise specified controls to prevent adverse human actions following permanent closure. The location of the controlled area is the *site.* The *accessible environment* is the atmosphere, land surface, surface water, oceans, and the portion of the lithosphere that is outside the controlled area. There is an area, designated the *geologic setting,* which includes the geologic, hydrologic, and geochemical systems of the region in which a geologic repository operations area is or may be located. The geologic repository operations area plus the portion of the geologic setting that provides isolation of the radioactive waste make up the *geologic repository.*

(d) *Stages in the licensing process.* There are several stages in the licensing process. The *site characterization* stage, though begun before submission of a license application, may result in consequences requiring evaluation in the license review. The *construction stage* would follow, after issuance of a construction authorization. A *period of operations* follows the issuance of a license by the Commission. The period of operations includes the time during which *emplacement* of wastes occurs; any subsequent period before permanent closure during which the emplaced wastes are *retrievable;* and *permanent closure,* which includes sealing of shafts. Permanent closure represents the end of active human intervention with respect to the engineered barrier system.

(e) *Isolation of waste.* (1) During the first several hundred years following permanent closure of a geologic repository, when radiation and thermal levels are high and the uncertainties in assessing repository performance are large, special emphasis is placed upon the ability to contain the wastes by waste packages within an *engineered barrier system.* This is known as the *containment period.* The *engineered barrier system* includes the waste packages and the underground facility. A *waste package* is composed of the waste form and any containers, shielding, packing, and absorbent materials immediately surrounding an individual waste container. The *underground facility* means the underground structure, including openings and backfill materials, but excluding, shafts, boreholes, and their seals.

(2) Following the containment period special emphasis is placed upon the ability to achieve isolation of the wastes by virtue of the characteristics of the geologic repository. The engineered barrier system works to control the release of radioactive material to the geologic setting and the geologic setting works to control the release of radioactive material to the accessible environment. *Isolation* means inhibiting the transport of radioactive material so that amounts and concentrations of the materials entering the accessible environment will be kept within prescribed limits.

Performance Objectives

§ 60.111 Performance of the geologic repository operations area through permanent closure.

(a) *Protection against radiation exposures and releases of radioactive material.* The geologic repository operations area shall be designed so that until permanent closure has been completed, radiation exposures and radiation levels, and releases of radioactive materials to unrestricted areas, will at all times be maintained within the limits specified in Part 20 of this chapter and such generally applicable environmental standards for radioactivity as may have been established by the Environmental Protection Agency.

(b) *Retrievability of waste.* (1) The geologic repository operations area shall be designed to preserve the option of waste retrieval throughout the period during which wastes are being emplaced and, thereafter, until the completion of a preformance confirmation program and Commission review of the information obtained from such a program. To

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satisfy this objective, the geologic repository operations area shall be designed so that any or all of the emplaced waste could be retrieved on a reasonable schedule starting at any time up to 50 years after waste emplacement operations are initiated, unless a different time period is approved or specified by the Commission. This different time period may be established on a case-by-case basis consistent with the emplacement schedule and the planned performance confirmation program.

(2) This requirement shall not preclude decisions by the Commission to allow backfilling part or all of, or permanent closure of, the geologic repository operations area prior to the end of the period of design for retrievability.

(3) For purposes of this paragraph, a reasonable schedule for retrieval is one that would permit retrieval in about the same time as that devoted to construction of the geologic repository operations area and the emplacement of wastes.

§ 60.112 Overall system performance objective for the geologic repository after permanent closure.

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The geologic setting shall be selected and the engineered barrier system and the shafts, boreholes and their seals shall be designed to assure that releases of radioactive materials to the accessible environment following permanent closure conform to such generally applicable environmental standards for radioactivity as may have been established by the Environmental Protection Agency with respect to both anticipated processes and events and unanticipated processes and events.

§ 60.113 Performance of particular barriers after permanent closure.

(a) *General provisions.* (1) *Engineered barrier system.* (i) The engineered barrier system shall be designed so that assuming anticipated processes and events: (A) Containment of HLW will be substantially complete during the period when radiation and thermal conditions in the engineered barrier system are dominated by fission product decay; and (B) any release of radionuclides from the engineered barrier system shall be a gradual process which results in small fractional releases to the geologic setting over long times. For disposal in the saturated zone, both the partial and complete filling with groundwater of available void spaces in the underground facility shall be appropriately considered and analysed among the anticipated processes and events in designing the engineered barrier system.

(ii) In satisfying the preceding requirement, the engineered barrier system shall be designed, assuming anticipated processes and events, so that:

(A) Containment of HLW within the waste packages will be substantially complete for a period to be determined by the Commission taking into account the factors specified in § 60.113(b) provided, that such period shall be not less than 300 years nor more than 1,000 years after permanent closure of the geologic repository; and

(B) The release rate of any radionuclide from the engineered barrier system following the containment period shall not exceed one part in 100,000 per year of the inventory of that radionuclide calculated to be present at 1,000 years following permanent closure, or such other fraction of the inventory as may be approved or specified by the Commission; provided, that this requirement does not apply to any radionuclide which is released at a rate less than 0.1% of the calculated total release rate limit. The calculated total release rate limit shall be taken to be one part in 100,000 per year of the inventory of radioactive waste, originally emplaced in the underground facility, that remains after 1,000 years of radioactive decay.

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(2) *Geologic setting.* The geologic repository shall be located so that pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment shall be at least 1,000 years or such other travel time as may be approved or specified by the Commission.

(b) On a case-by-case basis, the Commission may approve or specify some other radionuclide release rate, designed containment period or pre-waste-emplacement groundwater travel time, provided that the overall system performance objective, as it relates to anticipated processes and events, is satisfied. Among the factors that the Commission may take into account are—

(1) Any generally applicable environmental standard for radioactivity established by the Environmental Protection Agency;

(2) The age and nature of the waste, and the design of the underground facility, particularly as these factors bear upon the time during which the thermal pulse is dominated by the decay heat from the fission products;

(3) The geochemical characteristics of the host rock, surrounding strata and groundwater; and

(4) Particular sources of uncertainty in predicting the performance of the geologic repository.

(c) Additional requirements may be found to be necessary to satisfy the overall system performance objective as it relates to unanticipated processes and events.

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Land Ownership and Control

§ 60.121 Requirements for ownership and control of interests in land.

(a) *Ownership of land.* (1) Both the geologic repository operations area and the controlled area shall be located in and on lands that are either acquired lands under the jurisdiction and control of DOE, or lands permanently withdrawn and reserved for its use.

(2) These lands shall be held free and clear of all encumbrances, if significant, such as: (i) Rights arising under the general mining laws; (ii) easements for right-of-way; and (iii) all other rights arising under lease, rights of entry, deed, patent, mortgage, appropriation, prescription, or otherwise.

(b) *Additional controls.* Appropriate controls shall be established outside of the controlled area. DOE shall exercise any jurisdiction and control over surface and subsurface estates necessary to prevent adverse human actions that could significantly reduce the geologic repository's ability to achieve isolation. The rights of DOE may take the form of appropriate possessory interests, servitudes, or withdrawals from location or patent under the general mining laws.

(c) *Water rights.* (1) DOE shall also have obtained such water rights as may be needed to accomplish the purpose of the geologic repository operations area.

(2) Water rights are included in the additional controls to be established under paragraph (b) of this section.

Siting Criteria

§ 60.122 Siting criteria.

(a)(1) A geologic setting shall exhibit an appropriate combination of the conditions specified in paragraph (b) of this section so that, together with the engineered barriers system, the favorable conditions present are sufficient to provide reasonable assurance that the performance objectives relating to isolation of the waste will be met.

(2) If any of the potentially adverse conditions specified in paragraph (c) of this section is present, it may compromise the ability of the geologic repository to meet the performance objectives relating to isolation of the waste. In order to show that a potentially adverse condition does not so compromise the performance of the geologic repository the following must be demonstrated:

(i) The potentially adverse human activity or natural condition has been adequately investigated, including the

extent to which the condition may be present and still be undetected taking into account the degree of resolution achieved by the investigations; and

(ii) The effect of the potentially adverse human activity or natural condition on the site has been adequately evaluated using analyses which are sensitive to the potentially adverse human activity or natural condition and assumptions which are not likely to underestimate its effect; and

(iii)(A) The potentially adverse human activity or natural condition is shown by analysis pursuant to paragraph (a)(2)(ii) of this section not to affect significantly the ability of the geologic repository to meet the performance objectives relating to isolation of the waste, or

(B) The effect of the potentially adverse human activity or natural condition is compensated by the presence of a combination of the favorable characteristics so that the performance objectives relating to isolation of the waste are met, or

(C) The potentially adverse human activity or natural condition can be remedied.

(b) *Favorable conditions.* (1) The nature and rates of tectonic, hydrogeologic, geochemical, and geomorphic processes (or any of such processes) operating within the geologic setting during the Quaternary Period, when projected, would not affect or would favorably affect the ability of the geologic repository to isolate the waste.

(2) For disposal in the saturated zone, hydrogeologic conditions that provide—

(i) A host rock with low horizontal and vertical permeability;

(ii) Downward or dominantly horizontal hydraulic gradient in the host rock and immediately surrounding hydrogeologic units; and

(iii) Low vertical permeability and low hydraulic gradient between the host rock and the surrounding hydrogeologic units.

(3) Geochemical conditions that—(i) Promote precipitation or sorption of radionuclides; (ii) Inhibit the formation of particulates, colloids, and inorganic and organic complexes that increase the mobility of radionuclides; or (iii) Inhibit the transport of radionuclides by particulates, colloids, and complexes.

(4) Mineral assemblages that, when subjected to anticipated thermal loading, will remain unaltered or alter to mineral assemblages having equal or increased capacity to inhibit radionuclide migration.

(5) Conditions that permit the emplacement of waste at a minimum depth of 300 meters from the ground surface. (The ground surface shall be deemed to be the elevation of the lowest point on the surface above the disturbed zone.)

(6) A low population density within the geologic setting and a controlled area that is remote from population centers.

(7) Pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment that substantially exceeds 1,000 years.

(8) For disposal in the unsaturated zone, hydrogeologic conditions that provide—

(i) Low moisture flux in the host rock and in the overlying and underlying hydrogeologic units;

(ii) A water table sufficiently below the underground facility such that fully saturated voids contiguous with the water table do not encounter the underground facility;

(iii) A laterally extensive low-permeability hydrogeologic unit above the host rock that would inhibit the downward movement of water or divert downward moving water to a location beyond the limits of the underground facility;

(iv) A host rock that provides for free drainage; or

(v) A climatic regime in which the average annual historic precipitation is a small percentage of the average annual potential evapotranspiration.

(c) *Potentially adverse conditions.* The following conditions are potentially adverse conditions if they are characteristic of the controlled area or may affect isolation within the controlled area.

(1) Potential for flooding of the underground facility, whether resulting from the occupancy and modification of floodplains or from the failure of existing or planned man-made surface water impoundments.

(2) Potential for foreseeable human activity to adversely affect the groundwater flow system, such as groundwater withdrawal, extensive irrigation, subsurface injection of fluids, underground pumped storage, military activity or construction of large scale surface water impoundments.

(3) Potential for natural phenomena such as landslides, subsidence, or volcanic activity of such a magnitude that large-scale surface water impoundments could be created that could change the regional groundwater flow system and thereby adversely affect the performance of the geologic repository.

(4) Structural deformation, such as uplift, subsidence, folding, or faulting that may adversely affect the regional groundwater flow system.

(5) Potential for changes in hydrologic conditions that would affect the migration of radionuclides to the accessible environment, such as changes in hydraulic gradient, average interstitial velocity, storage coefficient, hydraulic conductivity, natural recharge, potentiometric levels, and discharge points.

(6) Potential for changes in hydrologic conditions resulting from reasonably foreseeable climatic changes.

(7) Groundwater conditions in the host rock, including chemical composition, high ionic strength or ranges of Eh-pH, that could increase the solubility or chemical reactivity of the engineered barrier system.

(8) Geochemical processes that would reduce sorption of radionuclides, result in degradation of the rock strength, or adversely affect the performance of the engineered barrier system.

(9) Groundwater conditions in the host rock that are not reducing.

(10) Evidence of dissolutioning such as breccia pipes, dissolution cavities, or brine pockets.

(11) Structural deformation such as uplift, subsidence, folding, and faulting during the Quaternary Period.

(12) Earthquakes which have occurred historically that if they were to be repeated could affect the site significantly.

(13) Indications, based on correlations of earthquakes with tectonic processes and features, that either the frequency of occurrence or magnitude of earthquakes may increase.

(14) More frequent occurrence of earthquakes or earthquakes of higher magnitude than is typical of the area in which the geologic setting is located.

(15) Evidence of igneous activity since the start of the Quaternary Period.

(16) Evidence of extreme erosion during the Quaternary Period.

(17) The presence of naturally occurring materials, whether identified or undiscovered, within the site, in such form that:

(i) Economic extraction is currently feasible or potentially feasible during the foreseeable future; or

(ii) Such materials have greater gross value or net value than the average for other areas of similar size that are representative of and located within the geologic setting.

(18) Evidence of subsurface mining for resources within the site.

(19) Evidence of drilling for any purpose within the site.

(20) Rock or groundwater conditions that would require complex engineering measures in the design and construction of the underground facility or in the sealing of boreholes and shafts.

(21) Geomechanical properties that do not permit design of underground opening that will remain stable through permanent closure.

(22) Potential for the water table to rise sufficiently so as to cause saturation of an underground facility located in the unsaturated zone.

(23) Potential for existing or future perched water bodies that may saturate portions of the underground facility or provide a faster flow path from an underground facility located in the unsaturated zone to the accessible environment.

(24) Potential for the movement of radionuclides in a gaseous state through air-filled pore spaces of an unsaturated geologic medium to the accessible environment.

50 FR 2964

Design Criteria for the Geologic Repository Operations Area

§ 60.130 Scope of design criteria for the geologic repository operations area.

Sections 60.131 through 60.134 specify minimum criteria for the design of the geologic repository operations area. These design criteria are not intended to be exhaustive, however. Omissions in §§ 60.131 through 60.134 do not relieve DOE from any obligation to provide such safety features in a specific facility needed to achieve the performance objectives. All design bases must be consistent with the results of site characterization activities.

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§ 60.131 General design criteria for the geologic repository operations area.

(a) *Radiological protection.* The geologic repository operations area shall be designed to maintain radiation doses, levels, and concentrations of radioactive material in air in restricted areas within the limits specified in Part 20 of this chapter. Design shall include—

(1) Means to limit concentrations of radioactive material in air;

(2) Means to limit the time required to perform work in the vicinity of radioactive materials, including, as appropriate, designing equipment for ease of repair and replacement and providing adequate space for ease of operation;

(3) Suitable shielding;

(4) Means to monitor and control the dispersal of radioactive contamination;

(5) Means to control access to high radiation areas or airborne radioactivity areas; and

(6) A radiation alarm system to warn of significant increases in radiation levels, concentrations of radioactive material in air, and of increased radioactivity released in effluents. The alarm system shall be designed with provisions for calibration and for testing its operability.

(b) *Structures, systems, and components important to safety. (1) Protection against natural phenomena and environmental conditions.* The structures, systems, and components important to safety shall be designed so that natural phenomena and environmental conditions anticipated at the geologic repository operations area will not interfere with necessary safety functions.

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(2) *Protection against dynamic effects of equipment failure and similar events.* The structures, systems, and components important to safety shall be designed to withstand dynamic effects such as missile impacts, that could result from equipment failure, and similar events and conditions that could lead to loss of their safety functions.

(3) *Protection against fires and explosions.* (i) The structures, systems, and components important to safety shall be designed to perform their safety fuctions during and after credible fires or explosions in the geologic repository operations area.

(ii) To the extent practicable, the geologic repository operations area shall be designed to incorporate the use of noncombustible and heat resistant materials.

(iii) The geologic repository operations area shall be designed to include explosion and fire detection alarm systems and appropriate suppression systems with sufficient capacity and capability to reduce the adverse effects of fires and explosions on structures, systems, and components important to safety.

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(iv) The geologic repository operations area shall be designed to include means to protect systems, structures, and components important to safety against the adverse effects of either the operation or failure of the fire suppression systems.

(4) *Emergency capability.* (i) The structures, systems, and components important to safety shall be designed to maintain control of radioactive waste and radioactive effluents, and permit prompt termination of operations and evacuation of personnel during an emergency.

(ii) The geologic repository operations area shall be designed to include onsite facilities and services that ensure a safe and timely response to emergency conditions and that facilitate the use of available offsite services (such as fire, police, medical and ambulance service) that may aid in recovery from emergencies.

(5) *Utility services.* (i) Each utility service system that is important to safety shall be designed so that essential safety functions can be performed under both normal and accident conditions.

(ii) The utility services important to safety shall include redundant systems to the extent necessary to maintain, with adequate capacity, the ability to perform their safety functions.

(iii) Provisions shall be made so that, if there is a loss of the primary electric power source or circuit, reliable and timely emergency power can be provided to instruments, utility service systems, and operating systems, including alarm systems, important to safety.

(6) *Inspection, testing, and maintenance.* The structures, systems, and components important to safety shall be designed to permit periodic inspection, testing, and maintenance, as necessary, to ensure their continued functioning and readiness.

(7) *Criticality control.* All systems for processing, transporting, handling, storage, retrieval, emplacement, and isolation of radioactive waste shall be designed to ensure that a nuclear criticality accident is not possible unless at least two unlikely, independent, and concurrent or sequential changes have occurred in the conditions essential to nuclear criticality safety. Each system shall be designed for criticality safety under normal and accident conditions. The calculated effective multiplication factor (k_{eff}) must be sufficiently below unity to show at least a 5% margin, after allowance for the bias in the method of calculation and the uncertainty in the experiments used to validate the method of calculation.

(8) *Instrumentation and control systems.* The design shall include provisions for instrumentation and control systems to monitor and control the behavior of systems important to safety over anticipated ranges for normal operation and for accident conditions.

(9) *Compliance with mining regulations.* To the extent that DOE is not subject to the Federal Mine Safety and Health Act of 1977, as to the construction and operation of the geologic repository operations area, the design of the geologic repository operations area shall nevertheless include such provisions for worker protection as may be necessary to provide reasonable assurance that all structures, systems, and components important to safety can perform their intended functions. Any deviation from relevant design requirements in 30 CFR, Chapter I, Subchapters D, E, and N will give rise to a rebuttable presumption that this requirement has not been met.

(10) *Shaft conveyances used in radioactive waste handling.* (i) Hoists important to safety shall be designed to preclude cage free fall.

(ii) Hoists important to safety shall be designed with a reliable cage location system.

(iii) Loading and unloading systems for hoists important to safety shall be designed with a reliable system of interlocks that will fail safely upon malfunction.

(iv) Hoists important to safety shall be

designed to include two independent indicators to indicate when waste packages are in place and ready for transfer.

§ 60.132 Additional design criteria for surface facilities in the geologic repository operations area.

(a) *Facilities for receipt and retrieval of waste.* Surface facilities in the geologic repository operations area shall be designed to allow safe handling and storage of wastes at the geologic repository operations area, whether these wastes are on the surface before emplacement or as a result of retrieval from the underground facility.

(b) *Surface facility ventilation.* Surface facility ventilation systems supporting waste transfer, inspection, decontamination, processing, or packaging shall be designed to provide protection against radiation exposures and offsite releases as provided in § 60.111(a).

(c) *Radiation control and monitoring.* (1) *Effluent control.* The surface facilities shall be designed to control the release of radioactive materials in effluents during normal operations so as to meet the performance objections of § 60.111(a).

(2) *Effluent monitoring.* The effluent monitoring systems shall be designed to measure the amount and concentration of radionuclides in any effluent with sufficient precision to determine whether releases conform to the design requirement for effluent control. The monitoring systems shall be designed to include alarms that can be periodically tested.

(d) *Waste treatment.* Radioactive waste treatment facilities shall be designed to process any radioactive wastes generated at the geologic repository operations area into a form suitable to permit safe disposal at the geologic repository operations area or to permit safe transportation and conversion to a form suitable for disposal at an alternative site in accordance with any regulations that are applicable.

(e) *Consideration of decommissioning.* The surface facility shall be designed to facilitate decontamination or dismantlement to the same extent as would be required, under other parts of this chapter, with respect to equivalent activities licensed thereunder.

§ 60.133 Additional design criteria for the underground facility.

(a) *General criteria for the underground facility.* (1) The orientation, geometry, layout, and depth of the underground facility, and the design of any engineered barriers that are part of the underground facility shall contribute to the containment and isolation of radionuclides.

(2) The underground facility shall be designed so that the effects of credible disruptive events during the period of operations, such as flooding, fires and explosions, will not spread through the facility.

(b) *Flexibility of design.* The underground facility shall be designed with sufficient flexibility to allow adjustments where necessary to accommodate specific site conditions identified through in situ monitoring, testing, or excavation.

(c) *Retrieval of waste.* The underground facility shall be designed to permit retrieval of waste in accordance with the performance objectives of § 60.111.

(d) *Control of water and gas.* The design of the underground facility shall provide for control of water or gas intrusion.

(e) *Underground openings.* (1) Openings in the underground facility shall be designed so that operations can be carried out safely and the retrievability option maintained.

(2) Openings in the underground facility shall be designed to reduce the potential for deleterious rock movement or fracturing of overlying or surrounding rock.

(f) Rock excavation. The design of the underground facility shall incorporate excavation methods that will limit the potential for creating a preferential pathway for groundwater to contact the waste packages or radionuclide migration to the accessible environment.

(g) *Underground facility ventilation.* The ventilation system shall be designed to—(1) Control the transport of radioactive particulates and gases within and releases from the underground facility in accordance with the performance objectives of § 60.111(a).

(2) Assure continued function during normal operations and under accident conditions; and

(3) Separate the ventilation of excavation and waste emplacement areas.

(h) *Engineered barriers.* Engineered barriers shall be designed to assist the geologic setting in meeting the performance objectives for the period following permanent closure.

(i) *Thermal loads.* The underground facility shall be designed so that the performance objectives will be met taking into account the predicted thermal and thermomechanical response of the host rock, and surrounding strata, groundwater system.

§ 60.134 Design of seals for shafts and boreholes.

(a) *General design criterion.* Seals for shafts and boreholes shall be designed so that following permanent closure they do not become pathways that compromise the geologic repository's ability to meet the performance objectives or the period following permanent closure.

(b) *Selection of materials and placement methods.* Materials and placement methods for seals shall be selected to reduce, to the extent practicable:

(1) The potential for creating a preferential pathway for groundwater to contact the waste packages or (2) for radionuclide migration through existing pathways.

Design Criteria for the Waste Package

§ 60.135 Criteria for the waste package and its components.

(a) *High-level-waste package design in general.* (1) Packages for HLW shall be designed so that the in situ chemical, physical, and nuclear properties of the waste package and its interactions with the emplacement environment do not compromise the function of the waste packages or the performance of the underground facility or the geologic setting.

(2) The design shall include but not be limited to consideration of the following factors: solubility, oxidation/reduction reactions, corrosion, hydriding, gas generation, thermal effects, mechanical strength, mechanical stress, radiolysis, radiation damage, radionuclide retardation, leaching, fire and explosion hazards, thermal loads, and synergistic interactions.

(b) *Specific criteria for HLW package design. (1) Explosive, pyrophoric, and chemically reactive materials.* The waste package shall not contain explosive or pyrophoric materials or chemically reactive materials in an amount that could compromise the ability of the underground facility to contribute to waste isolation or the ability of the geologic repository to satisfy the performance objectives.

(2) *Free liquids.* The waste package shall not contain free liquids in an amount that could compromise the ability of the waste packages to achieve the performance objectives relating to containment of HLW (because of chemical interactions or formation of pressurized vapor) or result in spillage and spread of contamination in the event of waste package perforation during the period through permanent closure.

(3) *Handling.* Waste packages shall be designed to maintain waste containment during transportation, emplacement, and retrieval.

(4) *Unique identification.* A label or other means of identification shall be provided for each waste package. The identification shall not impair the integrity of the waste package and shall be applied in such a way that the information shall be legible at least to the end of the period of retrievability.

Each waste package identification shall be consistent with the waste package's permanent written records.

(c) *Waste form criteria for HLW.* High-level radioactive waste that is emplaced in the underground facility shall be designed to meet the following criteria:

(1) *Solidification.* All such radioactive wastes shall be in solid form and placed in sealed containers.

(2) *Consolidation.* Particulate waste forms shall be consolidated (for example, by incorporation into an encapsulating matrix) to limit the availability and generation of particulates.

(3) *Combustibles.* All combustible radioactive wastes shall be reduced to a noncombustible form unless it can be demonstrated that a fire involving the waste packages containing combustibles will not compromise the integrity of other waste packages, adversely affect any structures, systems, or components important to safety, or compromise the ability of the underground facility to contribute to waste isolation.

(d) *Design criteria for other radioactive wastes.* Design criteria for waste types other than HLW will be addressed on an individual basis if and when they are proposed for disposal in a geologic repository.

48 FR 28194

Performance Confirmation Requirements

§ 60.137 General requirements for performance confirmation.

The geologic repository operations area shall be designed so as to permit implementation of a performance confirmation program that meets the requirements of Subpart F of this part.

Subpart F—Performance Confirmation Program

§ 60.140 General requirements.

(a) The performance confirmation program shall provide data which indicates, where practicable, whether—

(1) Actual subsurface conditions encountered and changes in those conditions during construction and waste emplacement operations are within the limits assumed in the licensing review; and

(2) Natural and engineered systems and components required for repository operation, or which are designed or assumed to operate as barriers after permanent closure, are functioning as intended and anticipated.

(b) The program shall have been started during site characterization and it will continue until permanent closure.

(c) The program shall include in situ monitoring, laboratory and field testing, and in situ experiments, as may be appropriate to accomplish the objective as stated above.

(d) The program shall be implemented so that:

(1) It does not adversely affect the ability of the natural and engineered elements of the geologic repository to meet the performance objectives.

(2) It provides baseline information and analysis of that information on those parameters and natural processes pertaining to the geologic setting that may be changed by site characterization, construction, and operational activities.

(3) It monitors and analyzes changes from the baseline condition of parameters that could affect the performance of a geologic repository.

(4) It provides an established plan for feedback and analysis of data, and implementation of appropriate action.

48 FR 28194

§ 60.141 Confirmation of geotechnical and design parameters.

(a) During repository construction and operation, a continuing program of surveillance, measurement, testing, and geologic mapping shall be conducted to ensure that geotechnical and design parameters are confirmed and to ensure that appropriate action is taken to inform the Commission of changes needed in design to accommodate actual field conditions encountered.

(b) Subsurface conditions shall be monitored and evaluated against design assumptions.

(c) As a minimum, measurements shall be made of rock deformations and displacement, changes in rock stress and strain, rate and location of water inflow into subsurface areas, changes in groundwater conditions, rock pore water pressures including those along fractures and joints, and the thermal and thermomechanical response of the rock mass as a result of development and operations of the geologic repository.

(d) These measurements and observations shall be compared with the original design bases and assumptions. If significant differences exist between the measurements and observations and the original design bases and assumptions, the need for modifications to the design or in construction methods shall be determined and these differences and the recommended changes reported to the Commission.

(e) In situ monitoring of the thermomechanical response of the underground facility shall be conducted until permanent closure to ensure that the performance of the natural and engineering features are within design limits.

§ 60.142 Design testing.

(a) During the early or developmental stages of construction, a program for in situ testing of such features as borehole and shaft seals, backfill, and the thermal interaction effects of the waste packages, backfill, rock, and groundwater shall be conducted.

(b) The testing shall be initiated as early as is practicable.

(c) A backfill test section shall be constructed to test the effectiveness of backfill placement and compaction procedures against design requirements before permanent backfill placement is begun.

(d) Test sections shall be established to test the effectiveness of borehole and shaft seals before full-scale operation proceeds to seal boreholes and shafts.

48 FR 28194

§ 60.143 Monitoring and testing waste packages.

(a) A program shall be established at the geologic repository operations area for monitoring the condition of the waste packages. Waste packages chosen for the program shall be representative of those to be emplaced in the underground facility.

(b) Consistent with safe operation at the geologic repository operations area, the environment of the waste packages selected for the waste package monitoring program shall be representative of the environment in which the wastes are to be emplaced.

(c) The waste package monitoring program shall include laboratory experiments which focus on the internal condition of the waste packages. To the extent practical, the environment experienced by the emplaced waste packages within the underground facility during the waste package monitoring program shall be duplicated in the laboratory experiments.

(d) The waste package monitoring program shall continue as long as practical up to the time of permanent closure.

Subpart G—Quality Assurance

§ 60.150 Scope.

As used in this part, "quality assurance" comprises all those planned and systematic actions necessary to provide adequate confidence that the geologic repository and its subsystems or components will perform satisfactorily in service. Quality assurance includes quality control, which comprises those quality assurance actions related to the physical characteristics of a material, structure, component, or system which provide a means to control the quality of the material, structure, component, or system to predetermined requirements.

§ 60.151 Applicability.

The quality assurance program applies to all systems, structures and components important to safety, to design and characterization of barriers important to waste isolation and to activities related thereto. These activities include: site characterization,

facility and equipment construction, facility operation, performance confirmation, permanent closure, and decontamination and dismantling of surface facilities.

§ 60.152 Implementation.

DOE shall implement a quality assurance program based on the criteria of Appendix B of 10 CFR Part 50 as applicable, and appropriately supplemented by additional criteria as required by § 60.151.

Subpart H—Training and Certification of Personnel

§ 60.160 General requirements.

Operations of systems and components that have been identified as important to safety in the Safety Analysis Report and in the license shall be performed only by trained and certified personnel or by personnel under the direct visual supervision of an individual with training and certification in such operation. Supervisory personnel who direct operations that are important to safety must also be certified in such operations.

48 FR 28194

§ 60.161 Training and certification program.

DOE shall establish a program for training, proficiency testing, certification and requalification of operating and supervisory personnel.

§ 60.162 Physical requirements.

The physical condition and the general health of personnel certified for operations that are important to safety shall not be such as might cause operational errors that could endanger the public health and safety. Any condition which might cause impaired judgment or motor coordination must be considered in the selection of personnel for activities that are important to safety. These conditions need not categorically disqualify a person, so long as appropriate provisions are made to accommodate such conditions.

Subpart I—Emergency Planning Criteria [Reserved]

PART 60

DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN GEOLOGIC REPOSITORIES; LICENSING PROCEDURES

PROPOSED RULE MAKING

49 FR 5934
Published 2/16/84
Comment period expires 4/16/84.
Comments received after this date will be considered if its practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

10 CFR Part 60

Disposal of High-Level Radioactive Wastes in the Unsaturated Zone

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is considering amending its rules on the disposal of high-level radioactive wastes (HLW) in geologic repositories so that the technical criteria for geologic disposal in the saturated zone may be equally applicable to disposal within the unsaturated zone. The amendments are being proposed in response to public comments on the proposed technical criteria for geologic disposal in the saturated zone. Final technical criteria adopted by the Commission for disposal of HLW in the saturated zone were published in the **Federal Register** on June 21, 1983.

DATES: Comment period expires April 16, 1984. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: Send comments or suggestions to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. Copies of comments received may be examined at the NRC Public Document Room, 1717 H Street NW., Washington, DC 20555.

FOR FURTHER INFORMATION CONTACT: Dr. Colleen Ostrowski, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC. 20555, telephone (301) 427–4343.

SUPPLEMENTARY INFORMATION:

Background

On February 25, 1981 the Nuclear Regulatory Commission (NRC) published a rule that established procedures for licensing the disposal of HLW in geologic repositories (46 FR 13971). NRC published proposed technical criteria to be used in the evaluation of license applications under those procedures on July 8, 1981 (46 FR 35280). In response to solicitation for public comments on the proposed technical criteria NRC received 93 comment letters. The Commission considered all public comments in developing the final technical criteria which were published on June 21, 1983 (48 FR 28194).

Several commenters on the proposed rule, including the U.S. Department of Energy (DOE), the U.S. Department of the Interior, and separately the U.S. Geological Survey (USGS), took issue with a statement made by the Commission at 46 FR 35281 which explained that the proposed technical criteria were developed specifically for disposal in saturated geologic media because DOE plans at that time called for HLW disposal at sufficient depth to be situated in the hydrogeologic region termed the saturated zone. The commenters considered disposal in the unsaturated zone [1] to be a viable alternative, and noted that since the technical criteria were generally applicable without regard to the possibility of saturation, their scope and applicability should not be unduly restricted. DOE, in its comments on this issue, suggested that since opportunities may arise for exploratory studies in unsaturated geologic media, the Commission should reexamine the rule and make whatever changes are necessary to ensure that the rule will apply to all geologic media. The U.S. Department of the Interior urged that the rule be modified because, under appropriate conditions, the unsaturated zone could provide one more natural barrier to the movement of radionuclides from the geologic repository to the water table.

The Commission has determined that disposal of HLW within the unsaturated zone is a realistic alternative to disposal within the saturated zone, provided that the site and the geologic repository design are carefully selected, and are capable of meeting the performance objectives of 10 CFR Part 60. In reaching this determination, the Commission has examined the arguments presented by the public commenters as well as the analysis of the principal issues associated with unsaturated zone disposal described in the NRC staff technical support document (draft NREG–1046) prepared in conjunction with the proposed amendments. This document identifies the positive aspects and possible concerns associated with disposal in the unsaturated zone and explains why the Commission has developed the following proposed amendments. Other issues which were discussed by public commenters but which did not result in proposed changes to the final rule are also addressed in the technical support document. Upon publication, a copy of draft NUREG–1046 entitled "Disposal of High-Level Radioactive Wastes in the Unsaturated Zone: Technical Considerations" will be placed in the Public Document Room, 1717 H Street NW., Washington, DC 20555. Since this document is available to the general public,[2] only a summary discussion of these issues is presented below.

[1] The definition of the term "unsaturated zone" is derived from U.S. Geological Survey Water Supply Paper 1988 (Washington, DC, 1972).

[2] Free single copies of Draft NUREG–1046 may be requested for public comment by writing to the Publication Services Section, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Issues Examined by the Commission

The depth to the regional water table varies throughout the United States. Potential geologic repository sites within unsaturated geologic media may be identified in arid to semi-arid geographic regions of the country because such regions generally are characterized by a deep regional water table and hence, a relatively thick unsaturated zone. The unsaturated zone in certain arid regions of the United States has been documented as extending to depths of approximately 600 meters below the ground surface. In contrast, the unsaturated zone in humid regions is often only a few meters thick, or entirely non-existent.

Perhaps the most positive aspect associated with disposal of HLW within the unsaturated zone is that the HLW would be emplaced in a relatively dry (i.e., low moisture content) geologic medium. The Commission considers the relatively low moisture content of unsaturated sediment and rock as a positive aspect of HLW disposal in the unsaturated zone because the lack of available moisture could reduce leaching of the waste packages and thus, significantly reduce the likelihood of radionuclide transport by groundwater [3] migration. Further, it is generally recognized that vertical groundwater flux in the unsaturated zone is very small. A credible pathway for the migration of water soluble contaminants from a geologic repository located in the unsaturated zone to the accessible environment would probably be vertically downward to the underlying regional water table, and subsequently through the saturated groundwater units to the regional discharge points.

The Commission has reviewed several other issues that are of general concern to disposal of HLW in geologic repositories, regardless of the hydrogeologic zone involved. Such issues include the effects of climatic changes on the regional hydrologic systems, the potential for human intrusion into the geologic repository, and the effects of geologic processes (e.g., tectonism) on the structural stability of the geologic repository. The Commission does not believe that any of these issues would negate the generic concept of HLW disposal within the unsaturated zone. However, since the relative importance of these issues will depend upon natural conditions existing at a particular site, each must be evaluated on a site-by-site basis.

Vapor transport of contaminants has been identified by the Commission's staff as a potential concern associated with HLW disposal in the unsaturated zone. In unsaturated geologic media, water is transported in both liquid and vapor phases. The relative contribution of transport via liquid and vapor phases, and their direction of movement with respect to a geologic repository will have a direct influence on the containment of contaminants. Vapor transport, particularly when a thermal gradient is imposed may provide a possible mechanism for radionuclide migration from a geologic repository. However, positive aspects associated with vapor transport in the unsaturated zone may also be discerned since water vapor formed-near the geologic repository may flow through air-filled openings and partially drained fractures, resulting in a drying of the surrounding host rock. This drying zone may extend hundreds of meters from the geologic repository, and thus may inhibit the movement of soluble contaminants. Therefore, the Commission views vapor transport as another issue which must be evaluated on a case-by-case basis to determine its effects (whether favorable or potentially adverse) on a particular site.

Other Comments Considered by NRC

The Commission has reviewed the following six issues related to HLW disposal within the unsaturated zone which were addressed in the public comments on the proposed rule, as well as in a recent USGS publication,[4] and has determined that the final rule (48 FR 28194) accommodates these concerns. More detailed discussion of these issues is presented in draft NUREG–1046.

Minimum 300-Meters Depth for Waste Emplacement

One commenter on the proposed 10 CFR Part 60 technical criteria who advocated applying the rule equally to the saturated and unsaturated zones considered it necessary to change the siting criterion which sets a minimum depth of 300 meters for waste emplacement. However, the commenter incorrectly identified this provision (see § 60.122(b)) as a requirement, rather than as a favorable condition. The Commission notes that favorable conditions are those which may enhance waste isolation potential. Hence, a minimum depth of 300 meters for waste emplacement is considered a favorable condition because the deeper the HLW is emplaced, the less likely it is to be disturbed. Viewed in that light this depth is a favorable condition, irrespective of hydrogeologic zone. Since the unsaturated zone may extend to depths of up to 600 meters, the Commission considers this favorable condition to be a realistic one for both the saturated and unsaturated zones. Therefore, this provision of the rule has not been modified.

Requirements for Sealing Shafts and Boreholes

In USGS Circular 903 the view was expressed that, with respect to a geologic repository within the unsaturated zone, sealing shafts and boreholes tightly to inhibit water movement may be undesirable. The reasoning behind this view is that although shafts and boreholes need to be carefully sealed in the saturated zone so that they do not become future conduits for radionuclide migration, they may have an entirely different relation to an unsaturated zone repository. Shafts and boreholes would increase the amount of water moving through a geologic repository located within the unsaturated zone only if they diverted a significant amount of runoff to the subsurface.

The Commission has reviewed both the arguments of the USGS and the provisions of the final rule relating to the design of seals for shafts and boreholes (§ 60.134). The provisions of § 60.134 appear to be generally applicable to seals of shafts and boreholes in both hydrogeologic zones. Therefore, the Commission does not consider it necessary to modify § 60.134 at this time.

Backfill Requirements

Another issue which has been identified both in public comments on the proposed technical criteria and in USGS Circular 903 pertains to the necessity of backfill in a geologic repository located within the unsaturated zone. The USGS expressed the view that the role of backfill in the unsaturated zone would be the opposite of that in the saturated zone. Backfill material that would inhibit the flow of water to, and radionuclide migration from, the waste packages may be highly desirable in the saturated zone. In the unsaturated zone, however, the designers of a geologic repository may wish to promote drainage. The opinion has been expressed that within the unsaturated zone backfill should allow groundwater to drain readily, rather than serve as a barrier to drainage. It was suggested in USGS Circular 903 that if backfill is necessary to perserve

[3] The Commission recognizes that the term "groundwater" is generally applied by the technical community to water which occurs beneath the water table (i.e., phreatic water) while the term "vadose water" is more accurately applied to the soil water, gravitational water and capillary water which occur in the unsaturated zone (zone of aeration, vadose zone). However, for the sake of simplicity, groundwater is defined in the proposed amendments as all water which occurs below the Earth's surface.

[4] Roseboom, E. H. Jr., 1983, Disposal of High-Level Nuclear Waste Above the Water Table in Arid Regions, U.S. Geological Survey Circular 903, Washington, DC, p. 21.

structural or waste package integrity, a relatively permeable material (e.g., cobble-sized rock) could be used to permit continued drainage.

The final rule published by the Commission on June 21, 1983 contained only the general functional statement that the engineered barrier system (including backfill) be designed to assist the geologic setting in meeting the performance objectives for the period following permanent closure (§ 60.133(h), 48 FR 28227). This provision, as promulgated, should be responsive to the concerns discussed above.

Waste Package Design Criteria

As defined at § 60.2, the term "waste package" means "the waste form and any containers, shielding, packing and other absorbent materials immediately surrounding an individual waste container" (48 FR 28219). The point has been raised that because of the different nature of the emplacement environment designs of waste package components for the saturated and unsaturated zones may be quite different. The Commission recognizes that several characteristics of the emplacement environment (e.g., oxidation conditions, lithostatic pressure, geochemistry, contact with groundwater, etc.) may vary significantly between the two hydrogeologic zones. This variation of emplacement environment may necessitate that DOE consider alternative designs for waste packages (including waste form, canisters, overpack, etc.) for geologic disposal in the unsaturated zone. The Commission has reviewed the performance objectives which pertain to the waste package (§ 60.111 and § 60.113), and believes that the provisions, as currently written, are equally applicable to waste packages emplaced within either the saturated or unsaturated zone. Similarly, the specific design criteria for the waste package and its components (§ 60.135, 48 FR 28227) have been determined to be generally applicable to both zones. Therefore, no changes have been made to the provisions of §§ 60.111, 60.113, or 60.135.

Ventilation

The issue of restricting the number of ventilation shafts associated with a geologic repository was addressed in USGS Circular 903. In the case of the saturated zone, the number of ventilation shafts may be kept at a minimum since the shafts could constitute potential pathways to the accessible environment. In USGS Circular 903 it is stated that in the case of the unsaturated zone additional shafts for ventilation would not compromise the geologic repository's performance because sealing shafts in the unsaturated zone is much simpler and of less consequence than in the saturated zone. Several potential benefits were cited by the USGS to support this view—e.g., reducing the problem of thermal load in the early phases of the geologic repository, removal of any water vapor during the operational period, drawing large amounts of desert air through the geologic repository to promote even drier conditions and increasing worker safety by providing alternative sources of ventilation and escape routes.

The number of ventilation shafts included in any geologic repository will be decided by the designer—DOE. No provision of 10 CFR Part 60 expressly limits the number of ventilation shafts that a geologic repository may contain. What is important is that the surface facility ventilation systems comply with the design critera in § 60.132(b) (48 FR 28226) and that the underground facility ventilation system be designed in accordance with § 60.133(g) (48 FR 28227). The Commission considers the design requirements for the ventilation systems set forth in §§ 60.132 and 60.133 to be applicable to both the saturated and unsaturated zones. As long as the ventilation system complies with provisions of §§ 60.111(a), 60.132, and 60.133 and does not compromise the integrity of the site to host a geologic repository, DOE will have broad flexibility in designing the system.

Exploratory Boreholes

Provisions relating to site characterization are set forth in the final rule at § 60.10 (48 FR 28219). Section 60.10(d)(2) requires that the number of exploratory boreholes and shafts be limited to the extent practical, consistent with obtaining the information needed for site characterization. The view was expressed in USGS Circular 903 that in the unsaturated zone, if the host rock already has a high vertical permeability, there is no reason to limit the number of drill holes. Thus, the USGS noted that if necessary, a proposed geologic repository could be explored like an ore body or coal bed, with drill holes every few hundred feet on a rectangular grid.

The Commission's view on the importance of not compromising the integrity of a site during the site characterization program of testing and exploration has been clearly stated at 44 FR 70409. However, if DOE should opt for a site exploration and characterization program which includes plans for drilling numerous boreholes then DOE would have the burden of showing the Commission that the ability of the site to isolate HLW has not been compromised during these activities.

Groundwater Travel Time in the Unsaturated Zone

The concept of groundwater travel time generally is applied in evaluations of saturated flow systems, where flow is continuous and temporal fluctuations in the potential of the systems are small. In contrast, water movement in the unsaturated zone is generally discontinuous and strongly dependent upon initial conditions (e.g., magnitude and spatial and temporal distribution recharge events) and the conductive properties of the partially saturated geologic media, which vary with moisture content. Reliable calculations and predictions of groundwater travel times and velocities require knowledge of these conditions and properties. Within the unsaturated zone the movement of a given volume of water over a given distance depends very strongly upon the nature of the recharge events. Additionally, the material properties (e.g., moisture characteristic curves, porosity, irreducible saturation, etc.) and the initial conditions (e.g., saturation, capillary pressure, matric potential) may be extremely difficult to measure on a representative scale for unsaturated porous and fractured geologic media.

For these reasons, calculations of pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel through the unsaturated zone may have large associated uncertainities, and may be of questionable value in estimating the capability of the geologic setting to isolate HLW from the accessible environment.

The new definition of the term "groundwater" which the Commission is proposing would have the effect of expanding the scope of the performance objectives set forth in § 60.113 to disposal in either the saturated or unsaturated zone. Similarly, the proposed amendment to the Siting Criteria (§ 60.122(b)(7)) would have the effect of making pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment which substantially exceeds 1,000 years a favorable condition for HLW disposal within either the saturated or unsaturated zone.

The Commission's current thinking on this issue is that if DOE can demonstrate with reasonable assurance that travel time for groundwater movement through the unsaturated zone can be quantified, then DOE should be allowed to include such travel time when demonstrating compliance with § 60.113(a)(2). However, such calculations of groundwater travel times through the unsaturated zone could involve

considerable uncertainty. Further, long groundwater travel time possibly may be inconsistent with the proposed amendment which identifies a host rock that provides for free drainage as a favorable hydrogeologic condition for disposal of HLW within the unsaturated zone. It may be more appropriate for the Commission to specify another parameter upon which performance may be evaluated for a geologic setting in the unsaturated zone, or to utilize the approach set forth in § 60.113(b) which provides the Commission with the flexibility to specify variations in performance objectives on a case-by-case basis, as long as the overall system performance objective is satisifed. Therefore, to solicit input in these matters the Commission is particularly seeking public comment on the following questions:

1. How can groundwater travel time in the unsaturated zone be determined with reasonable assurance? Should the groundwater travel time performance objective be limited to groundwater movement within the saturated zone?

2. Does groundwater travel time represent an appropriate measure of performance for a site within the unsaturated zone, or would an alternative performance objective for the geologic setting, (e.g., maximum likely volumetric flow rate of groundwater through the geologic repository) be more appropriate?

Environmental Impact: Negative Declaration

Pursuant to Section 121(c) of the Nuclear Waste Policy Act of 1982, the promulgation of these criteria shall not require the preparation of an environmental impact statement under Section 102(2)(C) of the National Environmental Policy Act of 1969 or any environmental review under subparagraph (E) or (F) of Section 102(2) of such Act.

Paperwork Reduction Review

The proposed rule contains no new or amended recordkeeping, reporting or application requirements, or any other type of information collection requirements subject to the Paperwork Reduction Act (Pub. L. 96-511).

Regulatory Flexibility Act Certification

In accordance with the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)), the Commission certifies that this rule, if adopted, will not have a significant economic impact on a substantial number of small entities. The only entity subject to regulation under this rule is the U.S. Department of Energy.

List of Subjects in 10 CFR Part 60

High-level waste, Nuclear power plants and reactors, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Waste treatment and disposal.

Issuance

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the Nuclear Waste Policy Act of 1982, and 5 U.S.C. 553, the Nuclear Regulatory Commission is proposing the following amendments to 10 CFR Part 60.

PART 60—DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN GEOLOGIC REPOSITORIES

Authority: Secs. 51, 53, 62, 63, 65, 81, 161, 182, 183, 68 Stat. 929, 930, 932, 933, 935, 948, 953, 954, as amended (42 U.S.C. 2071, 2073, 2092, 2093, 2095, 2111, 2201, 2232, 2233); secs. 202, 206, 88 Stat. 1244, 1246, (42 U.S.C. 5842, 5846); secs. 10 and 14, Pub. L. 95-601, 92 Stat. 2951 (42 U.S.C. 2021a and 5851); sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332); sec. 121, Pub. L. 97-425, 96 Stat. 2228 (42 U.S.C. 1014).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273). §§ 60.71 to 60.75 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

1. Section 60.2 is amended by adding two new definitions in proper alphabetical sequence:

§ 60.2 Definitions.

* * * * *

"Groundwater" means all water which occurs below the Earth's surface.

"Unsaturated zone" means the zone between the land surface and the deepest water table. Generally, water in this zone is under less than atmospheric pressure, and some of the voids may contain air or other gases at atmospheric pressure. Beneath flooded areas or in perched water bodies the water pressure locally may be greater than atmospheric.

* * * * *

2. Section 60.122 is amended by revising paragraph (b)(2)(iii), designating paragraph (b)(2)(iv) as (b)(7), and adding new paragraphs (b)(8), (c) (22), (23) and (24) to read as follows:

§ 60.122 Siting criteria.

* * * * *

(b) * * *

(2) * * * (iii) Low vertical permeability and low hydraulic potential between the host rock and the surrounding hydrogeologic units.

* * * * *

(7) Pre-waste-emplacement groundwater trave time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment that substantially exceeds 1,000 years.

(8) For disposal in the unsaturated zone, hydrogeologic conditions that provide—

(i) Low and nearly constant moisture flux in the host rock and in the overlaying and underlying hydrogeologic units;

(ii) A water table sufficiently below the underground facility such that fully saturated voids continuous with the water table do not encounter the underground facility;

(iii) A laterally extensive low-permeability hydrogeologic unit above the host rock that would inhibit the downward movement of water or divert downward moving water to a location beyond the limits of the underground facility;

(iv) A host rock that provides for free drainage; or

(v) A climatic regime in which the average annual historic precipitation is a small percentage of the average annual potential evapotranspiration.

* * * * *

(c) * * *

(22) Potential for the water table to rise sufficiently so as to cause saturation of an underground facility located in the unsaturated zone.

(23) Potential for existing or future perched water bodies that may have the effect of saturating portions of the underground facility or providing a faster flow path for radionuclide movement from an underground facility located in the unsaturated zone to the accessible environment.

(24) Potential for vapor transport of radionuclides from the underground facility located in the unsaturated zone to the accessible environment.

Dated at Washington, D.C., this 13th day of February 1984.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

≫50 FR 2579
Published 1/17/85
Comment period expires 3/18/85

10 CFR Part 60

Disposal of High-Level Radioactive Waste in Geologic Repositories; Amendments to Licensing Procedures

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission is proposing revisions to procedures with respect to NRC reviews of license applications for disposal of high-level radioactive waste in geologic repositories. For the most part, the revisions reflect the provisions of the Nuclear Waste Policy Act of 1982, particularly as they relate to site characterization and the participation of States and Indian tribes in the process of siting, licensing, and development of disposal facilities.

DATES: Comment period expires March 18, 1985. Comments received after March 18, 1985 will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments filed on or before that date.

ADDRESSES: Submit written comments and suggestions to: Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. Copies of comments received may be examined at the Commission's Public Document Room, 1717 H Street NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Clark Prichard, Division of Radiation Programs and Earth Sciences, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 427–4586.

SUPPLEMENTARY INFORMATION: The Nuclear Regulatory Commission (Commission or NRC) in 1981 promulgated procedures for licensing Department of Energy (DOE) facilities for disposal of high-level radioactive wastes in geologic repositories (46 FR 13971, February 25, 1981). More recently Congress has established a definite Federal policy for such disposal. Nuclear Waste Policy Act of 1982, Pub. L. 97–425, 42 U.S.C. 10101 (Waste Policy Act). Section 121 of the Waste Policy Act directs the Commission, not later than January 1, 1984, to promulgate technical requirements and criteria that it will apply in approving or disapproving license applications with respect to geologic repositories. The Commission has complied with this requirement by publishing final technical criteria (48 FR 28914, June 21, 1983). The Commission is now turning to a review of its previously adopted procedures. One objective is to reflect the provisions of the Waste Policy Act. In addition, however, the Commission is taking this opportunity to clarify its procedures in the light of experience gained over the past three years in consultations on the SCA reviews of DOE siting projects and in light of the extensive prelicensing interaction process now underway between NRC, the states, and DOE.

The principal aspects of the licensing procedures that the Commission has under review concern (1) the role of NRC during site screening and site characterization activities, (2) State, tribal, and public participation in NRC activities with respect to geologic repositories, (3) NRC responsibilities under the National Environmental Policy Act (NEPA), (4) procedures and standards for identifying categories of material as high-level radioactive wastes, and (5) changes, especially with respect to content of the license application, needed to conform the licensing procedures to the technical criteria.[1] The present rulemaking proposal deals with the first two of these topics; because the two are so intertwined they will be treated together.

Background

In 1974, when the Atomic Energy Commission's functions were divided between the Energy Research and Development Administration (ERDA) and the Nuclear Regulatory Commission, Congress provided generally that ERDA high-level waste disposal facilities were to the subject to NRC's regulatory and licensing authority (42 U.S.C. 5842). NRC's role with respect to such facilities remained unchanged when the functions of ERDA were transferred in 1977 to the new Department of Energy (DOE) (42 U.S.C. 7151).

Although the Atomic Energy Act recognizes the interest of the States in the peaceful uses of atomic energy and the need for cooperation with the States with respect to the control of radiation hazards, the Federal government was authorized to regulate the disposal of high-level radioactive waste to protect public health and safety (42 U.S.C. 2021(c), 10 CFR 150.15). Nevertheless, the Act recognizes the need for cooperation with the States, 42 U.S.C. 2021(a), and it is Commission practice to consult with State and local governments on matters of common interest.[2]

Recognizing that further legislative guidance would help to define appropriate forms of consultation and cooperation, Congress in 1978 directed the Commission to prepare a report on means for improving the opportunities for State participation in the process for siting, licensing, and developing nuclear waste storage or disposal facilities. NRC Authorization Act for Fiscal Year 1979, Pub. L. 95–601, Sec. 14(b). After consultation with the States, the Commission submitted its report to Congress in 1979. *Means for Improving State Participation in the Siting, Licensing and Development of Federal Nuclear Waste Facilities*, NUREG–0539, reprinted in *Nuclear Waste Isolation Pilot Plant (WIPP): Oversight Hearings Before the Subcommittee on Oversight and Investigations of the House Comm. on Interior and Insular Affairs*, 96th Cong., 1st Sess. 514–601 (1979) (the NRC Report). The NRC Report, "Based on the premise that State involvement in any national nuclear waste management program is a critical element in making the program work," included several procedural and substantive recommendations.

The value of such State involvement—for the Commission as well as for the States—was emphasized as the NRC developed a framework for licensing geologic repositories for high-level radioactive waste (10 CFR Part 60). The first step in this process was the Commission's publication of a Proposed General Statement of Policy (43 FR 53869, November 17, 1978). This document contemplated that the Commission would make licensing determinations before DOE commenced construction of a repository shaft. DOE would be encouraged, however, to

[1] Issues pertaining to NEPA will require modifications to 10 CFR Part 51. Amendments to 10 CFR Part 51 to reflect the Waste Policy Act will be the subject of a subsequent rulemaking. However, actions which the Commission may take relative to environmental assessements required by the Waste Policy Act are discussed later in this statement. Consideration of the definition of HLW is reserved, and the Commission anticipates publication of an advance notice of proposed rulemaking on this topic in coming months. The content of application section will be reviewed after issuance of DOE siting guidelines under the Waste Policy Act to take such guidelines into account if and as appropriate. The Commission would welcome suggestions from interested persons with respect to other changes that may be needed to reflect provisions of the Waste Policy Act.

[2] 42 U.S.C. 2021 is a codification of a 1959 statute which added a new Section 274 to the Atomic Energy Act of 1954. Section 274 established procedures and criteria for discontinuance of Federal regulatory responsibilities with respect to byproduct, source, and special nuclear materials and the assumption thereof by the States. However, under Section 274, the regulation of high-level waste disposal for safety reasons remained a Federal responsibility. *See Pacific Gas & Electric Co. v. Energy Commission*, 461 U.S. 190, 75 L.Ed.2d 752, 774 (1983).

consult informally in advance with NRC staff. At this early stage, NRC would point out aspects of a location selected by DOE which might require special attention or present special problems and NRC would help to define the kinds of information needed for licensing decisions. As noted, repository construction (including sinking of the main repository shaft) would require licensing action. Site characterization would continue during repository construction, with the data to be reviewed before issuance of a license authorizing receipt of radioactive material. Upon commencement of NRC's informal review, NRC would publish a notice in the Federal Register, send copies of information submitted by DOE to State and local officials, and offer to meet with those officials to provide information and explore possibilities of their participation in the licensing process.

After soliciting and considering views, the Comission next proceeded to issue a proposed rule. One significant difference from the policy statement was that DOE would be permited to sink shafts and engage in site characterization activities at depth before formal licensing proceedings were commenced. DOE's site characterization plans would nevertheless be reviewed in considerable detail in advance, with opportunity for public comment on an NRC draft site characterization analysis. The proposed rule incorporated detailed provisions to ensure extensive opportunities for State and public participation. These procedures were "designed to allow affected States to participate to the fullest extent possible within the limits of the Commission's authority and the State's own desires and capabilities." The Commission observed, however, that "provisions for State participation would be reviewed in the light of any pertinent statutory changes that may be enacted." Moreover, it noted that the extent of State participation may be affected by legislative action on the matters discussed in the NRC Report (44 FR 70408, December 6, 1979.

The final rule added provisions with respect to notice to and participation by Indian tribes. However, inasmuch as public comments on the proposed rule pointed out no serious deficiencies in the opportunities for State and public participation, the provisions that had been proposed were adopted without material change (46 FR 13971, February 25, 1981).

Both the proposed rule and final rule contemplated that DOE would characterize several sites at depth, primarily so as to enable the Commission to discharge its NEPA responsibilities with respect to evaluation of alternatives. With this in mind, DOE would have been required, as discussed below, to include information concerning its site selection process in its site characterization report to NRC.

The Existing Regulations

The principal aspects of the existing licensing procedures that are of present interest relate to (1) submission of DOE's site characterization report, (2) public notice of receipt of the site characterization report, (3) the preparation of a site characterization analysis by NRC, (4) consultation between NRC and States and Indian tribes, (5) participation in NRC reviews, and (6) procedures for the formal hearing process. It will be useful to review the present language of 10 CFR Part 60 with respect to these items before turning to the changes that we propose to adopt.

1. Site Characterization Report (§ 60.11)

NRC requires that DOE submit a site characterization report "as early as possible after commencement of planning for a particular geologic repository operations area, and prior to site characterization." Both the timing and required content of this report reflect the statutory directive in section 14(a) of the NRC Authorization Act for 1980, Pub. L. 95–601, which provides:

> Sec. 14(a) Any person, agency, or other entity proposing to develop a storage or disposal facility, including a test disposal facility, for high-level radioactive wastes, or irradiated nuclear reactor fuel, shall notify the Commission as early as possible after the commencement of planning for a particular proposed facility. The Commission shall in turn notify the Governor and the State legislature of the State of proposed situs whenever the Commission has knowledge of such proposal.

The Commission, in proposing its licensing procedures, made specific reference to this statute and explained that its rule would "ensure that the notice from the Department will, in fact, initiate a meaningful, substantive review" (44 FR 70400). The site characterization report, together with the NRC staff assessment thereof and meetings between NRC staff and State officials and other interested persons, "assures an early opportunity for other Federal and State agencies and the public to become involved in the decision making process" with respect to DOE's site characterization and site selection programs. *Ibid.* The review process would provide NRC an opportunity to identify and consider a broad range of public concerns; this would assist NRC in the preparation of a comprehensive and reasoned analysis.

The site characterization report would include more than a description of the site and the program to be undertaken to characterize the ability of the site to achieve waste isolation. It would also discuss "the method by which the site was selected for site characterization . . . and . . . a description of the decision process by which the site was selected for characterization, including the means used to obtain public, Indian tribal and States views during selection." Alternative media and sites at which DOE intends to carry out site characterization would be identified. DOE's report on these topics would enable the Commission to consider whether additional information might be needed by the Commission in discharging its NEPA responsibilities (46 FR 13972).

2. Notice and Publication (§ 60.11)

As directed by section 14(a) of the 1980 NRC Authorization Act, NRC rules provide for notice to the Governor and the State legislature of the State of proposed situs whenever a site characterization report is received. Although not required to do so by law, NRC would also (1) transmit copies of the site characterization report to these addressees, (2) provide similar notice to local officials, tribal organizations, and Governors of contiguous States, and (3) publish in the Federal Register notice of receipt of the site characterization report which, among other things, will advise that governmental and Tribal officials may request consultation with NRC staff.

3. Site Characterization Analysis (§ 60.11)

The rules provide that NRC will review the site characterization report and prepare a draft site characterization analysis which discusses the information submitted by DOE, and that a request for public comment on the draft site characterization analysis is to be published in the Federal Register; copies are to be transmitted to the State and local officials and Tribal organizations who had previously received notice under the rule. It was anticipated that NRC would hold local public meetings in the immediate area of the site to be characterized, both to disseminate information and to obtain public input, but this is not an explicit requirement under the rule. After a comment period of at least 90 days, NRC would transmit a final site

characterization analysis to DOE. As noted above, these procedures were designed to solicit comments that would assist NRC to prepare a comprehensive and reasoned analysis.

4. Consultation [§ 60.61, § 60.64(a)]

Under Part 60, NRC staff would consult with State government and Tribal officials, on written request, to keep them informed of NRC views on the progress of site characterization and to notify them of NRC meetings and consultations with DOE. NRC would respond to written question or comments from these officials and transmit such responses to DOE. Consultation would not be limited to site characterization, but could include a review of NRC licensing procedures and the type and scope of State and Tribal activities in the license review permitted by law as well.

5. Proposals for State Participation (§§ 60.62–64)

The NRC Report (at 18–24, 27–28) distinguished between improvement of State participation in the NRC review process on the one hand and, on the other, the carrying out of an "independent State review" of a proposal to store or dispose of nuclear waste. The Report identified several avenues for State participation in NRC reviews that could be implemented under existing law. These included support from NRC in the form of educational or information services, exchange of personnel under the Intergovernmental Personnel Act, and contracts for technical services needed by the Commission. Besides the activities that could be carried out under existing law, the Report (at 28) recommended that the Congress "establish a grant program to allow the States to participate more fully in the Federal waste management program."

Part 60 provides for State participation in the review of a site characterization report and/or license application. A proposal initiated by the State would describe how the State wishes to participate in the review and how it plans to facilitate local government and citizen participation, and it would include funding estimates of work to be done under contract with the NRC. Subject to the availability of funds and legal constraints, NRC would approve State proposals that it finds will enhance communications with the State and contribute productively to NRC's license review.

Under the State participation provisions, proposals can be submitted by any State "potentially affected" by the siting of a repository, even if the prospective repository site is in a different State. By the same token, Indian tribes "potentially affected" by the siting of a repository may submit proposals for participation in the same manner as the States.

6. Formal Licensing Procedures

The NRC rules provide that notice of specified events (docketing, hearing, proposed issuance of license, issuance of license) will be published in the **Federal Register**; there are additional specific requirements for notice to State and local officials (and to Tribal organizations if a repository is to be located within an Indian reservation). 10 CFR 2.101–2.106. Affected States and Indian tribes desiring to participate as a party to a licensing proceeding may petition for leave to intervene; and they may also participate in a more limited capacity as provided by the regulation. 10 CFR 2.714, 2.715.

The Needed Revisions

One of the purposes of the Waste Policy Act is to define the relationship between the Federal government and the State governments, and between the respective Federal agencies, with respect to the disposal of high-level radioactive waste. The Act prescribes in great detail procedures for DOE to consult and cooperate with the States (and affected Indian tribes) with respect to determining the suitability of an area for a repository and with respect to other issues arising in connection with the planning, siting, development, construction, operation, or closure of such a facility (Sec. 117, 42 U.S.C. 10137). DOE is directed to make initial grants to States with potentially acceptable sites for a repository and, subsequently, to provide further grants to any State in which there is a site approved for characterization (Sec. 116(c), 42 U.S.C. 10136). The latter grants are to enable the States, among other things, to review potential impacts of the repository upon the State and its residents and to provide information to such residents regarding the activities of DOE or the Commission with respect to the site. DOE is also directed to provide financial and technical assistance to a State in which a repository is to be located, after NRC has issued a construction authorization, in order to mitigate the impacts of development of the repository. *Ibid.* The Waste Policy Act also contains requirements that DOE hold public hearings at several stages of site selection and characterization [Sec. 112(b)(2), 42 U.S.C. 10132 (nomination); Sec. 113(b)(2), 42 U.S.C. 10133 (characterization); Sec. 114(a)(1), 42 U.S.C. 10134 (recommendation for development)]. The designation of a site as suitable for application for a construction authorization will not be effective over State objections except pursuant to a Congressional resolution which thereafter becomes law (Sec. 115, 42 U.S.C. 10135).

The Waste Policy Act reconfirms the authority and responsibility of the Commission to review a specific repository proposal, pursuant to the Atomic Energy Act, in order to protect the public health and safety. The Waste Policy Act provides for Commission review prior to site characterization, as well as in a formal licensing proceeding, and for a Commission determination as to whether a repository of a particular design at a specified site will provide adequate isolation of radioactive waste. The Waste Policy Act makes no specific provision for the Commission to engage in, or independently review, the processes of site screening and selection. The Commission's only prescribed participation in this selection process comes in NRC's review and concurrence in guidelines for the recommendation of sites for repositories (Sec. 112(a), 42 U.S.C. 10132). However, the Commission will review DOE's draft environmental assessments as it would review any other information on site investigation and site characterization, in order to allow early identification of potential licensing issues for timely resolution. Reviews will be carried out in accord with the procedural agreement between NRC and DOE for interface during site investigation and site characterization.[3]

While the Waste Policy Act establishes new procedures for the high-level waste management program, the Commission remains entirely free to consult with the States and Indian tribes, at its own initiative or theirs, with respect to any matter pertaining to NRC's regulatory role. Although specific channels are established for States and Indian tribes to engage in consultation and cooperation with DOE, these cannot substitute for direct interaction with

[3] Procedural Agreement between the U.S. Nuclear Regulatory Commission and the U.S. Department of Energy identifying guiding principles for interface during site investigation and site characterization. 48 FR 38701, August 25, 1983. The Procedural Agreement is designed to assure that an information flow is maintained to facilitate each agency's accomplishment of its responsibilities relative to site investigation and characterization. The Procedural Agreement also provides that DOE is to notify potential host States and affected Indian tribes of technical meetings between DOE and NRC technical staff and that DOE is to invite those States and tribes to attend. These technical meetings will be open meetings, with members of the public being permitted to attend as observers.

NRC with respect to this agency's functions. Nevertheless, an examination of the details of the Waste Policy Act highlights differences from Part 60 which need to be taken into account. In addition, there are some changes—particularly with respect to funding of State participation—that would have been desirable even in the absence of the new legislation. The need for revisions can be analyzed using the same heading as before.

1. Site Characterization Report

As is the case under the existing regulations, it is appropriate that the submission of information about a site and plans for characterization of the site should be the occasion for commencing NRC's initial substantive review. However, the Waste Policy Act specifies a number of actions DOE must take before such information is required to be submitted to NRC. Further, the Waste Policy Act calls for NRC to review information of narrower scope than that which, under 10 CFR Part 60, was to be included in the DOE site characterization report.

Under § 60.11, the site characterization report was to be furnished to NRC "as early as possible after commencement of planning" for a particular repository. In contrast, the Waste Policy Act requires that DOE first nominate several sites (after holding public hearings and consulting with the governors of affected States) and that particular locations would then be recommended as candidate sites which, if approved by the President, would be eligible for site characterization.

The new law marks this time—before DOE proceeds to sink shafts—as the point when the site characterization plan is submitted. When the Commission reviews this plan, the site to be characterized will already have been the subject of extensive scrutiny. It will have been described in an environmental assessment in which the siting guidelines are applied and will have been discussed at public meetings at which public comments will have been solicited and received. It also will have been reviewed by both DOE and the President in the course of the nomination approval process. Extensive data gathering programs may have been carried out in conjunction with these activities.

DOE may very well need to make choices and commitments in the course of such data gathering that could have a significant bearing upon the safety and licensability of a repository. The drilling of boreholes for testing purposes, for example, could affect the integrity of repository that might be constructed at the site. Close coordination between DOE and NRC is therefore needed prior to submission of the site characterization report so as to facilitate the early identification of issues of potential safety significance and so as to afford an opportunity for NRC to provide DOE with timely views.

Under the Waste Policy Act, the information which is to be submitted to the Commission for review and comment prior to site characterization is similar to existing § 60.11. Both Part 60 and the statute call for DOE to describe the site, the proposed site characterization activities, a conceptual repository design, and certain information with respect to waste form or packaging. However, several categories of information which were previously listed in § 60.11 are omitted under the Waste Policy Act from the required submission to NRC—notably, the method by which the site was selected for site characterization, the identification and location of alternative media and sites at which DOE intends to conduct site characterization, and a description of the decision process by which the site was selected for characterization (including the means used to obtain public, Indian tribal and State views during selection).

The Waste Policy Act still requires a discussion of the omitted items, but in a separate document called an environmental assessment (Sec. 112(b)(1), 42 U.S.C. 10132). The preparation of an environmental assessment is to be preceded by public hearings held by DOE and consultation by DOE with governors of affected States. *Ibid.* Although not required to do so by the Waste Policy Act, DOE intends to make environmental assessments in draft form available for public comment. All this occurs in connection with the nomination of a site prior to Presidential review and approval of a candidate site for site characterization.

The Waste Policy Act makes no provision for the Commission to comment to DOE on its environmental assessments or otherwise to participate in the nomination process. It is nevertheless the intention of the Commission to review and comment on the environmental assessments, as well as other technical documents being prepared by DOE, in order to assess on a continuing basis the information collected to date and the program for the development of additional information for a potential license application. However, the NRC staff would not comment upon the methodology used by DOE to compare sites or upon the relative merits of one site against another. Such a review by NRC is not necessary to fulfill any of its statutory responsibilities. Moreover DOE will be selecting sites using guidelines in which the NRC will have already concurred. We regard it as appropriate, however, and fully consistent with the objectives of the Waste Policy Act, for the NRC staff to provide to DOE current expressions of its views on the quality of the data available and the potential licensing issues that may be anticipated and that may need to be addressed in DOE's site investigation and site characterization activities.

In view of the foregoing considerations, § 60.11 needs to be revised to change both the timing and content of the DOE site characterization report to conform to the Waste Policy Act. Despite these changes, however, the Commission plans to be involved at earlier stages in reviewing data collected by DOE as well as its programs for gathering additional data. The instrument for accomplishing this—namely, the Procedural Agreement referred to above—is already in place and is being implemented routinely.

2. Notice and Publication

The Waste Policy Act provides that: "Before nominating a site, the Secretary [of Energy] shall notify the Governor and legislature of the State in which such site is located, or the governing body of the affected Indian tribe where such site is located, as the case may be, of such nomination and the basis for such nomination" (Sec. 112(b)(1)(H), 42 U.S.C. 10132). Later, after public hearings and a prescribed review process involving Presidential approval, DOE must submit site characterization plans to those same officials, for review and comment; concurrently, DOE is required to submit such plans to NRC (Sec. 113(b)(1), 42 U.S.C. 10133). Although publication of notice in the **Federal Register** is not required expressly, DOE must make both the environmental assessment and the site characterization plan "available to the public" [Secs. 112(b)(1)(G), 113(b)(2)(A), 42 U.S.C. 10132–33]. The Commission anticipates that DOE will give notice in the **Federal Register** as the means for assuring adequate public availability of these documents.

Since DOE is required to make its site characterization plan available to State and tribal officials and to the public, duplicative provisions may be removed from Part 60. Even so, however, it makes sense for the Commission to publicly acknowledge receipt of DOE's submission so as to provide notice of the

opportunity for consultation thereon with the NRC staff.

3. Site Characterization Analysis.

The Waste Policy Act requires, before DOE proceeds to sink shafts at a candidate site, that DOE submit its site characterization plans to NRC (as well as State and tribal officials) for review and comment (Sec. 113(b), 42 U.S.C. 10133). The Commission believes that Congress intended that DOE should provide the plans sufficiently far in advance so that comments may be developed and submitted back to DOE early enough to be considered when shaft sinking occurs, and at all time thereafter. As explained above, this implies an ongoing working relationship with DOE to assure that its data and assessments are made available to NRC as they are developed. As already mentioned, NRC and DOE have, in fact, developed a Procedural Agreement under which NRC is to have access to information as it is generated and, equally important, NRC is to comment regularly to DOE with respect to this information.

Thus, the Commission expects that the principal means of evaluation will be the interagency process that begins early in DOE's consideration of a site. When investigations have progressed far enough to warrant sinking of shafts, it is our expectation that NRC will already be adquately informed with respect to data generated to date and that NRC's concerns would already have been focused and brought to the attention of DOE. Assuming this to be the case, NRC should be in a position to complete its review and provide comments to DOE, as required by the Waste Policy Act, in a prompt fashion. The site characterization analysis would be a continuing dynamic process, better suited for ongoing public input and NRC review, rather than "freezing" the comment and review process at one arbitrary point in time.

An ongoing public review process would also facilitate DOE's ability to obtain comments on its site characterization plan from the States and Indian tribes as well. The Waste Policy Act affords an opportunity for these entities to enter into written agreements with DOE specifying procedures for consultation and cooperation that could include early review. Moreover, the NRC/DOE Procedural Agreement assures that States and Indian tribes will have an opportunity to be informed routinely concerning the information made available to NRC and NRC's comments thereon and to attend NRC/DOE technical meetings.

Under existing 10 CFR Part 60, DOE's submission of site characterization plans was to occur, as already noted, "as early as possible after commencement of planning" for a particular repository. There was no assurance that either NRC or other interested parties would have had prior information about the site or any opportunity to make conerns known to DOE. It was in this context that the Commission determined that NRC would prepare a draft site characterization analysis for public review and comment before developing a statement of the agency's views for consideration by DOE.

Under the Waste Policy Act, however, DOE's submission comes after an extensive period of interaction between DOE and the States, affected Indian tribes, and the public, and after Presidential review and approval of the sites recommended for characterization. By the time a site characterization plan is to be submitted for review and comment, there should have been ample opportunity for NRC to have become acquainted with both DOE's programs and the public's concerns. Since technical meetings under the Procedural Agreement will be open, interested parties will have an opportunity to follow the course of NRC activities and to bring their concerns to the attention of NRC. Further opportunities for public involvement are provided by law, since DOE must also seek the comments of the States and tribes, and hold public hearings in the vicinity of the site. For these reasons, together with the scheduling mandates of the Waste Policy Act, the Commission believes it is no longer necessary to prepare a draft site characterization analysis on which public comment is sought. The Commission particularly asks for views on this proposed change.

It should be emphasized, however, that NRC will have been engaged in an ongoing review of DOE's activities even before submission of a site characterization plan and that the comments of interested parties may be submitted at any time for consideration as a part of that review process.

4. Consultation

Under the Waste Policy Act, the Commission is directed to provide "timely and complete information regarding determinations or plans made with respect to site characterization, siting, development, design, licensing, construction, operation, regulation, or decommissioning" of a repository, Sec. 117, 42 U.S.C. 10137, but this affords no rights to States and Indian tribes beyond those already provided in law. H.R. Rep. 97-785, Part I at 74. The proposed amendments contain conforming language implementing this requirement. The Waste Policy Act charges DOE with the responsibility to "consult and cooperate" with the States and Indian tribes in an effort to resolve their concerns about the safety, environmental, and economic impacts of a repository. States may make comments and recommendations to DOE regarding any activities taken under this subtitle," and this may be funded by grants from DOE (Sec. 116(c)(1)(B)(v), 42 U.S.C. 10136). DOE is directed to take State and Indian concerns into account "to the maximum extent feasible" (Sec. 117(b), 42 U.S.C. 10137). Accordingly, in expectation that States and tribes will communicate directly with DOE with respect to its site characterization plans, the provision that the Director will respond to questions and comments of the States and tribes on DOE's plans has been deleted.

However, the Commission has consistently expressed its intention to maintain a dialogue with the States, Indian tribes, and members of the public. This intention is unchanged. The scope of such dialogue may appropriately extend to any issue which must be considered and resolved by NRC in the discharge of its licensing responsibilities.

5. Proposals for State Participation

Subpart C of 10 CFR Part 60 provides for the filing of proposals by States and Indian tribes for participation in reviews of site characterization reports and license applications. In response to such proposals, NRC would consider providing certain educational or information services and funding work that the State proposes to perform for the Commission, under contract, in support of the review.

With enactment of the Waste Policy Act, authority to fund a broad variety of State activities, including grants to enable a State "to review activities . . . for purposes of determining any potential economic, social, public health and safety, and environmental impacts" of a repository has been vested in DOE. Sec. 116(c)(1)(B)(i), 42 U.S.C. 10136; see also Sec. 118(b)(2)(A)(i) (pertaining to affected Indian tribes). The scope of NRC assistance available may be limited by this statutory direction. However, other elements of Commission support would not be affected as explained in greater detail in the section-by-section analysis below.

6. Formal Licensing Procedures

The Waste Policy Act incorporates the basic licensing structure which had been described in the Commission's regulations. It expressly provides for consideration of a DOE application, subject to certain deadlines, "in accordance with the laws applicable to such applications" (Sec. 114(d), 42 U.S.C. 10134). Affected States and Indian tribes will be entitled to participate in the licensing proceedings.

The new requirement that DOE and NRC provide timely and complete information to the States and tribes, Sec. 117(a), 42 U.S.C. 10137, would apply to significant milestones in the formal adjudicatory process. The rule presently reflects this, and the Commission finds no need to modify the formal regulatory structure for licensing activities at geologic repositories.

Section-by-Section Analysis

In light of the foregoing considerations, the Commission is proposing to revise its licensing procedures with respect to disposal of high-level waste in geologic repositories. The following section-by-section analysis provides additional explanatory information. All references are to Title 10, Chapter I, Code of Federal Regulations. Other revisions, including changes that may be needed to conform with the Waste Policy Act's provisions for environmental reviews, will be the subject of separate rulemaking.

10 CFR Part 60, Subpart A

Section 60.2 Definitions.

The terms "Indian Tribe" and "Tribal organization" would no longer appear in Part 60 and the definitions of the terms have therefore been deleted. The term "affected Indian tribe," as defined in the Waste Policy Act, is the proper designation for those entities that are entitled to notice and other recognition under the rule. The proposed rule incorporates the statutory definition of "affected Indian tribe."

10 CFR Part 60, Subpart B

The sections in this subpart have been renumbered so as to allow for insertion of additional general provisions, if needed, at a future date.

Section 60.15 [formerly § 60.10] Site characterization.

No change.

Section 60.16–18 [formerly § 60.11].

The former section § 60.11, captioned "Site characterization report," has been revised to conform to the Waste Policy Act. It has been divided into three sections in order to provide a clearer editorial structure.

The "site characterization report" has been changed to a "site characterization plan." Note that this includes more than DOE's "general plan for site characterization activities;" conforming to Sec. 113(b), 42 U.S.C. 10133, it must also incorporate information on waste form and packaging as well as a conceptual repository design. The change from "report" to "plan" better conveys to sense that DOE is describing a program to obtain information which can be used later to evaluate a site, as opposed to a presentation of data which would allow a preliminary judgment as to site acceptability. The NRC review process at this stage is not directed to advising DOE whether or not the site is or is not satisfactory, but rather whether or not the characterization program (1) will generate data needed for arriving at subsequent licensing determinations and (2) will adversely and significantly affect the ability of the geologic repository to achieve the prescribed performance objectives.

Section 60.16 Site characterization plan required.

The requirement for DOE to submit a site characterization report appeared in § 60.11(a). As before, the document (now a "plan") is to be submitted to the Director of NRC's Office of Nuclear Material Safety and Safeguards. The purpose of the submission ("for review and comment") is derived from the Waste Policy Act. Similarly, the timing of the submission ("before proceeding to sink shafts") reflects the new statutory direction.

The regulation refers to characterization at any area which has been approved by the President for site characterization. Such an area would be a "candidate site" as defined in the Waste Policy Act. The regulation avoids that term, however, because it already defines "site" in a different way.

Section 60.17 Contents of site characterization plan.

This section restates, with minor changes, the information which the Waste Policy Act requires to be submitted to the Commission for review and comment.

Because Part 60 defines high-level radioactive waste to include spent nuclear fuel, the latter category of material is not referred to in § 60.17.

Consistent with other provisions of Part 60, the term "geologic repository operations area" (rather than "geologic repository" or "repository") is employed when the context pertains to the area in which waste handling activities are conducted.

Part 60 defines "host rock" as "the geologic medium in which the waste is emplaced." Accordingly, the rule refers to the waste-host rock relationship instead of the relationship of the waste form or packaging and the geologic medium. The statute's reference to the "packaging" for the waste corresponds to Part 60's "waste package," and the proposed rule retains the latter term for purposes of consistency.

The Waste Policy Act requires DOE to include in its general plan for site characterization activities "any other information required by the Commission." The Commission has so far identified only one such item—namely information with respect to quality assurance. Other information may hereafter be found to be needed to enable the Commission to determine whether the proposed site characterization activities are appropriate; if so, the Commission would establish its requirement either by rule (particularly if the information would be valuable on a generic basis) or by order in a particular case. Although the Commission's obligations to observe the statutory schedule must be heeded, there is no reason in principle why the submission of other information could not be ordered even after the site characterization plan had been filed, if required for the Commission to discharge its review and comment responsibilities effectively.

The Waste Policy Act's reference to plans to control any adverse, "safety-related" impacts from site characterization activities can be traced to former § 60.11(a)(6)(iii). The Commission's concern originally was that DOE address those aspects of site characterization that (1) could be significant with respect to radiological safety prior to permanent closure or (2) could affect the ability of the repository to satisfy the performance objectives pertaining to waste isolation. The proposed rule contains language that reflects this construction of the statute.

The Commission recognizes that the requested level of detail is not spelled out precisely. Such items as "a description of the area" and "a conceptual design for the geologic repository operations area that takes into account likely site-specific requirements" must not be read in isolation. They must be understood to require sufficient detail for the Commission and other statutory reviewers to be able to comment in an informed manner. So construed, the Commission believes that they are

sufficiently clear; should additional information be needed, the Commission would retain the option, by order, to require further submissions.

As noted, the Commission has included an explicit statement that the site characterization plans should spell out DOE's quality assurance programs. Existing § 60.11 includes such language, but it was not included in the counterpart provision of the Waste Policy Act. However, since a principal aim of site characterization is to develop data that have been obtained and documented in a fashion which will support licensing findings, the NRC review should be concerned with the approach which DOE is taking to data collection, recording, and retention as well as to the content of the information which DOE seeks to assemble. Because of the importance it attaches to this item the Commission considers an explicit requirement for submission of information on quality assurance programs to be necessary.

We have also incorporated the statutory requirement that DOE is to include in its general plan a statement of the criteria to be used to determine suitability of the site for the location of a repository. Because site characterization will be a prerequisite for application of some guidelines, see Sec. 112(b)(1)(E)(ii), 42 U.S.C. 10132, we anticipate that the site characterization plan will also include a description of how DOE will use the information gathered during site characterization to determine if the site suitability guidelines are met.

The Waste Policy Act applies only with respect to geologic repositories that are used, at least in part, for the disposal of wastes from civilian nuclear activities. Sec. 8, 42 U.S.C. 10108. If DOE were to develop a facility exclusively for wastes from atomic energy defense activities, it would nevertheless be subject to licensing by NRC under the Energy Reorganization Act. The Commission has considered whether the changes proposed herein, which are largely responsive to the Waste Policy Act, would be appropriate with respect to such defense facilities. It appears that the Commission, acting under amended Part 60, could still effectively discharge its health and safety responsibilities for such defense waste facilities. But, in this section, the provisions that prescribe the contents of the site characterization plan need to recognize that defense-only facilities would not have any applicable siting criteria "developed pursuant to Section 112(a) of the Nuclear Waste Policy Act"; instead, in that case, the rule requires that the site characterization plan set out the siting criteria actually used by DOE.

On environmental matters, the situation is more complex. The Waste Policy Act limitations with respect to the scope of the Commission's environmental responsibilities under NEPA—which we would implement in the modified procedures at the site characterization stage—would not apply to a repository used solely for defense wastes. Accordingly, the Commission would expect to require that DOE submit, with its site characterization plan for a defense facility, those items of information with respect to site screening and selection that appear in existing § 60.11(a) but which are not included in this proposed rule. Because the information relates to implementation of NEPA, it would be incorporated in revised 10 CFR Part 51 rather than Part 60.

Section 60.18 Review of site characterization activities.

As under existing § 60.11(b), the Commission will publish notice of receipt of DOE's site characterization plan. Although this may duplicate information published by DOE, it will serve to identify, to anyone interested, appropriate points of contact within the NRC staff. Since alternative areas are not required to be identified in the site characterization plan, the proposed rule omits any reference to such areas. Language pertaining to consultation has been revised to conform with proposed Subpart C.

Similarly, notwithstanding duplication of notice by DOE, the Commission will give direct notice to State and tribal officials concerning receipt of DOE's site characterization plan. Under the proposed rules, this information would be furnished to the officials entitled to timely and complete information under the Waste Policy Act. Because such officials would already have received copies of the site characterization plans from DOE, the notice from the Commission would not be accompanied by additional copies thereof. However, a copy of the site characterization plan would be placed in the pubic Document Room. (Existing § 60.11 would require local officials, and also the governors of contiguous States, to be afforded notice from NRC. This requirement has been deleted in the light of the new statutory provisions.)

For the reasons set out in the discussion above, the proposed rule omits the mandatory draft site characteeization analysis described in existing § 60.11. However, the proposed rule does provide that the Director may invite and consider comments on DOE's site characterization plan and that he may also review and consider the comments made in connection with the public hearings which Doe's is required to hold. Moreover, the Director will publish a notice of availability of a site characterization analysis and will invite host States, affected Indian tribes and all other interested persons to review and comment thereon. Comments received in respone to such invitation will be reviewed by the Director; and where the Director determines that there are substantial new grounds for making recommendation or stating objections to DOE's site characterization program, these concerns will be expressed to DOE.

The Director's review of the site characterization plan is substantially equivalent to the final site characterization analysis prescribe by existing § 60.11. The reference to the Director's "comments" reflects the Waste Policy Act provision that the information is submitted to the Commission for "review and comment." The proposed rule refers to a "statement" of objections by the Director, instead of a Director's "opinion" of objections by the Director, instead of a Director's "opinion"; the later term was unnecessarily equivocal. It is intended that the objections would be directed at the nature of the site characterization activities being proposed and not to the suitability of the site as such; of course, if it appeared that a particular site exhibited such a profound deficiency that it could not be compensated for adequately in the light of data from any site characterization program, the Director could object to the program in its entirety, but the Commission regards this as highly improbable given the procedures prior to submission of a site characterization plan to NRC specified in the Waste Policy Act.

The inclusion of a finding with respect to the necessity of using radioactive material implements the specific direction in Section 113(c)(2)(A), 42, U.S.C. 10133; the Commission has previously concluded that the use of source, special nuclear, and byproduct material for purposes of site characterization does not require a license, 10 CFR § 60.7, and there is no reason to believe that the Waste Policy Act was intended to change this view.

Since DOE is not required to prepare an environmental impact statement with respect to site characterization, see Sec. 113(d), 42 U.S.C. 10133, the references in references in existing § 60.11 to such statement have been omitted. A footnote to the text of the rule points out, however, that DOE's environmental

assessments will be reviewed—as other DOE documents will be—for the purpose of early identification of potential licensing issues for timely resolution.

The Waste Policy Act requires the DOE report to the Commission (and to State and tribal authorities) at least semiannually on the nature and extent of site characterization activities and the information developed from such activities. The same concerns were addressed in existing § 60.11(g). The Commission believes the two formulations are essentially the same, but that the more detailed version in the NRC regulation provides a clearer statement of the information that is needed. Accordingly, the proposed rule conforms closely to the Commission's earlier rule. The most significant change, reflecting the adption of a statutory directive to DOE, is that the provisions are now expressed in mandatory ("shall") terms. Also, the existing rule includes a provision for submission of additional reports on any topic, if requested by the Director; as modified, such other topics must still be covered as requested by the Director, but the information may be included in the semiannual reports instead of "additional" ones. The Director will review the semiannual reports and, where appropriate on the basis of new information contained therein, the Director will make recommendations or state objections with respect to DOE's site characterization program.

The proposed rule provides for the Director to transmit to State and tribal officials copies of all comments made to DOE under § 60.18. This includes not only the site characterization analysis and comments on the site characterization plan, but also any other comments which the Director chooses to make by way of "expressing current views." Other correspondence between NRC and DOE will be placed in the Public Document Room, but will not routinely be distributed to the designated officials. The omission of the requirement that the Director consider comments received from States in accordance with § 60.61 conforms to the changes in Subpart C. Such comments may, however, be solicited and reviewed as appropriate in individual cases and, as noted, comments on the site characterization analysis will be invited and will be reviewed, and such review may be the basis for the director to express to DOE additional recommendations or objections.

Except for some editorial changes, othe provisions of §60.18 are the same as existing regulations.

10 CFR Part 60, Subpart C

This subpart deals with participation by State governments and Indian tribes in the Commission's licensing and pre-licensing activities. The role of the States and tribes in repository siting and development is addressed in great detail by several provisions in the Nuclear Waste policy Act. While the Commission finds that some changes in Subpart C are needed in light of those provisions, it remains our intention to encourage close working relations with the States and tribes. The revisions and designed to clarify the means by which this can be accomplished in a manner conforming to the new law.

Section 60.61 Provision of information.

This section implements the requirement in the Waste Policy Act, Sec. 117(a), 42 U.S.C. 10137, that NRC furnish timely and complete information to host States and affected Indian tribes regarding its determinations or plans. It applies, insofar as Commission responsibilities are concerned, from the time a site characterization proposal is submitted throughout the entire life of the repository through "decommissioning." Consistent with other usage in Part 60, the phrase "permanent closure, or decontamination and dismantlement of surface facilities" is used instead of the statutory term "decommissioning."

Some of the most significant communications may consist of determinations made in the course of licensing proceedings. Under our rules of practice, parties on the service list in such proceedings are required to be served with notice of all relevant pleadings, decisions, order, etc. Accordingly, the Commission will use this established procedure as the means for providing information regarding licensing actions.

Section 60.62 Site review.

The Waste Policy Act establishes a structure for the involvement of States and affected Indian tribes. The proposed rule therefore provides explicitly for consultation with States and affected Indian tribes but omits mention of local governments. (However, the Commission anticipates, in light of the Waste Policy Act, see Sec. 116(c)(1)(B)(iv), 42 U.S.C. 10136, that the States would establish appropriate procedures to address local government and citizen concerns.)

Since the concerns of the States and affected Indian tribes will be dealt with primarily under the statutory consultation and cooperation procedures, the Commission has eliminated reference to any consultation activities by NRC that are more appropriately and directly carried out by DOE under those procedures. Thus, consistent with the Waste Policy Act, questions concerning DOE's site characterization submissions should be directed to DOE for its consideration and response, and notification concerning NRC meetings or consultations with DOE should be provided by DOE. Notwithstanding these changes, however, it remains the policy of the Commission that consultation with interested parties with respect to site characterization should be encouraged. As new, information would be available routinely with respect to NRC's views on the progress of site characterization, on NRC procedures, and on the development of proposals for participation in license reviews.

Although the Waste Policy Act does not provide formally for NRC activity prior to Presidential approval of an area for site characterization, and this is noted in revised § 60.62, there will be coordination during the earlier stages of site screening and site characterization in accordance with the Procedural Agreement between NRC and DOE; special provisions has been made in that agreement for States and Indian tribes to receive notice and to attend NRC/DOE meetings so as to enable them to engage knowledgeably, on an early and ongoing basis, in site characterization reviews.

The opportunity to request that the Director consult with respect to the NRC review of site characterization activities is not limited to prospective host States. The extent to which a State may be affected by the prospective location would, of course, be a factor for the Director to consider in determining the staff resources that would be made available for purposes of such consultation.

Section 60.63 Participation in license reviews.

This section is a substitute for the earlier §§ 60.62–60.65.

Section 60.63 acknowledges, first of all, that State and local governments and affected Indian tribes may participate in license reviews as provided in the Commission's rules of practice. Local governments are mentioned in this context because they may have standing, apart from the State in which they are located, to participate in a licensing proceeding as a party or participate in a more limited capacity. See 10 CFR 2.714, 2.715(c).

The regulation retains a provision for a State or affected Indian tribe to submit

a proposal to facilitate its participation in the review of a site characterization plan and/or license application. The existing requirement that proposals be submitted no later than 120 days after docketing of a license application has been eliminated; although early submissions are desirable, we can readily conceive of cases in which proposals submitted after review of a license application could be implemented in the mutual interests of the proposing entity and the Commission. The types of services or activities that NRC might consider providing would include those educational or information services and related actions that are set out in existing § 60.62(d)

The Commission has omitted those portions of existing § 60.62(c) that contemplate Commission funding of State work in support of the license review. In light of the Waste Policy Act, funding of such work to improve the State's capacity to review a license application is a responsibility of DOE and it is to be financed out of the Nuclear Waste Fund. We do not rule out the possibility that the NRC may contract with State governments on occasion for particular services that we may require in order to be able to discharge our statutory responsibilities effectively. The execution of such contracts would be carried out under established procurement procedures and would be subject to applicable limitations with respect to competitive bidding and avoidance of conflicts of interest. See 41 CFR Chapter 1 (Federal Procurement Regulations). A further reason for handling such contracts under the general procurement regulations rather than Part 60 is that the criteria for approval of proposals (existing § 60.63, proposed § 60.63(d)) would be inappropriate when the Commission's purpose is to acquire services which it needs in discharging its own reviewing functions.

Considering this limitation of the scope of NRC activities under Subpart C, the requirement for gubernatorial approval of a State proposal has been eliminated as being unnecessary. The information required to be included in the proposal has also been modified to conform to the limitation of scope. The Waste Policy Act may have further limited the opportunities for states to receive funding from the NRC, the Commission is of the view that Congress intended that DOE should assume the Federal responsibility for activities of the types described in Sections 116 and 118 and that such activities should be financed out of the Nuclear Waste Fund rather than out of NRC appropriations.

Existing § 60.64, pertaining to participation of Indian tribes, has been incorporated in the substantive provisions applicable to States. The change has been made for editorial reasons and is not intended to affect the right of affected Indian tribes to participate like the States in the activities described in Subpart C.

Existing § 60.65, dealing with coordination of multiple proposals, has been deleted. The Commission deems it unlikely that multiple proposals of the kinds considered eligible for acceptance under Subpart C would present any undue administrative difficulties; the criteria for approval of proposals (especially the finding of "productive contribution" to the license review) would afford the Director adequate discretion to take into account the desirability of avoiding duplication.

Section 60.64 Notice to States.

The Commission encourages the Governor and legislature of a State to jointly designate a single point of contact to receive notice and information from the Commission. This section provides for notice to such jointly designated nominees.

Section 60.65 Representation.

Under the present rule, the signature of the Governor would serve to document the authority pursuant to which proposals were being submitted to the Commission. Submissions by Indian tribes were to be accompanied by documentation of the eligibility of the tribe and the authority of its representatives. This section is designed to retain the principle of assuring that representatives are properly identified. With respect to States, a change is needed to reflect the fact that proposals will no longer need to be signed by the Governor. In the case of Indian tribes, the determination by the Secretary of the Interior that it is "affected" eliminates the need for the Commission to be concerned with its eligibility.

Commissioner Asselstine's Additional Views

Commissioner Asselstine would retain the present requirement in 10 CFR 60.11 for NRC review of the site screening and selection process which DOE must now include in the environmental assessments. He would cite as the Commission's authority to review the draft environmental assessments the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the National Environmental Policy Act of 1969, as amended, and the Nuclear Waste Policy Act of 1982, and not just the NRC/DOE Procedural Agreement.

Commissioner Asselstine would also retain the present requirement in 10 CFR 60.11 for NRC issuance of the draft site characterization analyses for public comment.

Commissioner Asselstine would appreciate comment on whether these two elements should be retained in the Commission's regulations.

Environmental Impact

Pursuant to section 121(c) of the Nuclear Waste Policy Act, this proposed rule does not require the preparation of an environmental impact statement under section 102(2)(c) of the National Environmental Policy Act of 1969 or any environmental review under subparagraph (E) or (F) of section 102(2) of such act.

Paperwork Reduction Act Statement

This proposed rule contains information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et. seq.). This rule has been submitted to the Office of Management and Budget for review and approval of the paperwork requirements.

Regulatory Flexibility Act Certification

In accordance with the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)), the Commission certifies that this rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. This proposed rule relates to the licensing of only one entity, the U.S. Department of Energy, which does not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act.

List of Subjects in 10 CFR Part 60

High-level waste, Nuclear power plants and reactors, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Waste treatment and disposal.

Issuance

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the Nuclear Waste Policy Act of 1982, and 5 U.S.C. 553, the Nuclear Regulatory Commission proposes to adopt the following amendment to 10 CFR Part 60.

PART 60—DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN GEOLOGIC REPOSITORIES

1. The authority citation for Part 60 continues to read as follows:

Authority—Secs. 51, 53, 62, 63, 65, 81, 161, 182, 183, 68 Stat. 929, 930, 932, 933, 935, 948, 953, 954, as amended (42 U.S.C. 2071, 2073, 2092, 2093, 2095, 2111, 2201, 2232, 2233); secs. 202, 206, 88 Stat. 1244, 1246 (42 U.S.C. 5842, 5846); secs. 10 and 14, Pub. L. 95-601, 92 Stat. 2951 (42 U.S.C. 2021a and 5851); sec. 102, Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332); sec. 121, Pub. L. 97-425, 96 Stat. 2228 (42 U.S.C. 10141).

For the purposes of Sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 60.71 to 60.75 are issued under Sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201o)).

2. Section 60.2 is revised by removing the definitions of "Indian tribe" and "Tribal organization" and inserting, in the appropriate alphabetical location, a definition of the term "affected Indian tribe" to read as follows:

§ 60.2 Definitions.

As used in this part—

* * * * *

"Affected Indian tribe" means an affected Indian tribe as defined in the Nuclear Waste Policy Act of 1982.

* * * * *

§ 60.10 [Redesignated as § 60.15]

3. Section 60.10 is Redesignated § 60.15.

§ 60.11 [Removed]

4. Section 60.11 is Removed.

5. Sections 60.16 through 60.18 are added to read as follows:

§ 60.16 Site characterization plan required.

Before proceeding to sink shafts at any area which has been approved by the President for site characterization, DOE shall submit to the Director, for review and comment, a site characterization plan for such area.

§ 60.17 Contents of site characterization plan.

The site characterization plan shall contain—

(a) A general plan for site characterization activities to be conducted at the area to be characterized, which general plan shall include—

(1) A description of such area, including information on quality assurance programs that have been applied to the collection, recording, and retention of information used in preparing such description.

(2) A description of such site characterization activities, including the following—

(i) The extent of planned excavations;

(ii) Plans for any onsite testing with radioactive or nonradioactive material;

(iii) Plans for any investigation activities that may affect the capability of such area to isolate high-level radioactive waste;

(iv) Plans to control any adverse impacts from such site characterization activities that are important to safety or that are important to waste isolation; and

(v) Plans to apply quality assurance to data collection, recording, and retention.

(3) Plans for the decontamination and decommissioning of such area, and for the mitigation of any significant adverse environmental impacts caused by site characterization activities, if such area is determined unsuitable for application for a construction authorization for a geologic repository operations area;

(4) Criteria, developed pursuant to section 112(a) of the Nuclear Waste Policy Act of 1982 (or in the case of a geologic repository that is not subject to the Waste Policy Act, such other siting criteria as may have been used by DOE), to be used to determine the suitability of such area for the location of a geologic repository; and

(5) Any other information which the Commission, by rule or order, requires.

(b) A description of the possible waste form or waste package for the high-level radioactive waste to be emplaced in such geologic repository, a description (to the extent practicable) of the relationship between such waste form or waste package and the host rock at such area, and a description of the activities being conducted by DOE with respect to such possible waste form or waste package or their relationship; and

(c) A conceptual design for the geologic repository operations area that takes into account likely site-specific requirements.

§ 60.18 Review of site characterization activities.[1]

(a) The Director shall cause to be published in the **Federal Register** a notice that a site characterization plan has been received from DOE and that a staff review of such plan has begun. The notice shall identify the area to be characterized and the NRC staff members to be consulted for further information.

(b) The Director shall make a copy of the site characterization plan available at the Public Document Room. The Director shall also transmit copies of the published notice of receipt to the Governor and legislature of the State in which the area to be characterized is located and to the governing body of any affected Indian tribe. In addition, the Director shall make NRC staff available to consult with States and affected Indian tribes as provided in Subpart C of this part.

(c) The Director shall review the site characterization plan and prepare a site characterization analysis with respect to such plan. In the preparation of such site characterization analysis, the Director may invite and consider the views of interested persons on DOE's site characterization plan and may review and consider comments made in connection with public hearings held by DOE.

(d) The Director shall provide to DOE the site characterization analysis together with such additional comments as may be warranted. These comments shall include either a statement that the Director has no objection to the DOE's site characterization program, if such a statement is appropriate, or specific objections with respet to DOE's program for characterization of the area concerned. In addition, the Director may make specific recommendations pertinent to DOE's site characterization program.

(e) If DOE's planned site characterization activities include onsite testing with radioactive material, the Director's comments shall include a determination regarding whether or not the Commission concurs that the proposed use of such radioactive material is necessary to provide data for the preparation of the environmental reports required by law and for an application to be submitted under § 60.22 of this part.

(f) The Director shall publish in the **Federal Register** a notice of availability of the site characterization analysis and a request for public comment. A reasonable period, not less than 90 days, shall be allowed for comment. Copies of the site characterization analyses and of the comments received shall be made available at the Public Document Room.

(g) During the conduct of site characterization activities, DOE shall report not less than once every six

[1] In addition to the review of site characterization activities specified in this section, the Commission contemplates an ongoing review of other information on site investigation and site characterization, in order to allow early identification of potential licensing issues for timely resolution. This activity will include, for example, a review of the environmental assessments prepared by DOE at the time of site nomination. A procedural agreement covering NRC–DOE interface during site investigation and site characterization has been published in the **Federal Register**, 48 FR 38701, August 25, 1983.

months to the Commission on the nature and extent of such activities and the information that has been developed and on the progress of waste form and waste package research and development. The semiannual reports shall include the results of site characterization studies, the identification of new issues, plans for additional studies to resolve new issues, elimination of planned studies no longer necessary, identification of decision points reached and modifications to schedules where appropriate. DOE shall also report its progress in developing the design of a geologic repository operations area appropriate for the area being characterized, noting when key design parameters or features which depend upon the results of site characterization will be established. Other topics related to site characterization shall also be covered if requested by the Director.

(h) During the conduct of site characterization activities, NRC staff shall be permitted to visit and inspect the locations at which such activities are carried out and to observe excavations, borings, and in site tests as they are done.

(i) The Director may comment at any time in writing to DOE, expressing current views on any aspect of site characterization. In particular, such comments shall be made whenever the Director, upon review of comments invited on the site characterization analysis or upon review of DOE's semiannual reports, determines that there are substantial new grounds for making recommendations or stating objections to DOE's site characterization program.

(j) The Director shall transmit copies of the site characterization analysis and all comments to DOE made by him under this section to the Governor and legislature of the State in which the area to be characterized is located and to the governing body of any affected Indian tribe. When transmitting the site characterization analysis under this paragraph, the Director shall invite the addressees to review and comment thereon.

(k) All correspondence between DOE and the NRC under this section, including the reports described in paragraph (g), shall be placed in the Public Document Room.

(l) The activities described in paragraphs (a) through (k) above constitute informal conference between a prospective applicant and the staff, as described in § 2.101(a)(1) of this chapter, and are not part of a proceeding under the Atomic Energy Act of 1954, as amended. Accordingly, neither the issuance of a site characterization analysis nor any other comments of the Director made under this section constitute a commitment to issue any authorization or license or in any way affect the authority of the Commission, the Atomic Safety and Licensing Appeal Board, Atomic Safty and Licensing Boards, other presiding officers, or the Director, in any such proceeding.

6. Subpart C is revised to read as follows:

Subpart C—Participation by State Governments and Indian Tribes

§ 60.61 Provision of information.

(a) The Director shall provide to the Governor and legislature of any State in which a geologic repository operations area is or may be located, and to the governing body of any affected Indian tribe, timely and complete information regarding determinations or plans made by the Commission with respect to the site characterization, siting, development, design, licensing, construction, operation, regulation, permanent closure, or decontamination and dismantlemenmt of surface facilities, of such geologic respository operations area.

(b) For purposes of this section, a geologic repository operations area shall be considered to be one which "may be located" in a State if the location thereof in such State has been described in a site characterization plan submitted to the Commission under this part.

(c) Notwithstanding paragraph (a), the Director is not required to distribute any document to any entity if, with respect to such document, that entity or its counsel is included on a service list prepared pursuant to Part 2 of this chapter.

(d) Copies of all communications by the Director under this section shall be placed in the Public Document Room, and copies thereof shall be furnished to DOE.

§ 60.62 Site review.

(a) Whenever an area has been approved by the President for site characterization, and upon request of a State or an affected Indian tribe, the Director shall make NRC staff available to consult with representatives of such States and tribes.

(b) Requests for consultation shall be made in writing to the Director.

(c) Consultation under this section may include:

(1) Keeping the parties informed of the Director' views on the progress of site characterization.

(2) Review of applicable NRC regulations, licensing procedures, schedules, and opportunities for state participation in the Commission's regulatory activities.

(3) Cooperation in development of proposals for State participation in license reviews.

§ 60.63 Participation in license reviews.

(a) State and local governments and affected Indian tribes may participate in license reviews as provided in Subpart G of Part 2 of this chapter.

(b) In addition, whenever an area has been approved by the President for site characterization, a State or an affected Indian tribe may submit to the Director a proposal to facilitate its participation in the review of a site characterization plan and/or license application. The proposal may be submitted at any time and shall contain a description and schedule of how the State or affected Indian tribe wishes to participate in the review, of what services or activities the State or affected Indian tribe wishes NCR to carry out, and how the services or activities proposed to be carried out by NCR would contribute to such participation. The proposal may include educational or information services (seminars, public meetings) or other actions on the part of NCR, such as establishing additional public document rooms or employment or exchange of State personnel under the Intergovernmental Personnel Act.

(c) The Director shall arrange for a meeting between the representatives of the State or affected Indian tribe and the NCR staff to discuss any proposal submitted under paragraph (b) of this section, with a view of identifying any modifications that may contribute to the effective participation by such State or tribe.

(d) Subject to the availability of funds, the Director shall approve all or part of a proposal, as it may be modified through the meeting described above, if it is determined that:

(1) The proposed activities are suitable in light of the type and magnitude of impacts which the State or affected Indian tribe may bear;

(2) The proposed activities (i) will enhance communications between NRC and the State or affected Indian tribe (ii) will make a productive and timely contribution to the review and (iii) are authorized by law.

(e) The Director will advise the State or affected Indian tribe whether its proposal has been accepted or denied, and if all or any part of proposal is denied, the Director shall state the reason for the denial.

(f) Proposals submitted under this section, and responses thereto, shall be made available at the Public Document Room.

§ 60.64 Notice to States.

If the Governor and legislature of a State have jointly designated on their behalf a single person or entity to receive notice and information from the Commission under this part, the Commission will provide such notice and information to the jointly designated person or entity instead of the Governor and legislature separately.

§ 60.65 Representation.

Any person who acts under this subpart as a representative for a State (or for the Governor or legislature thereof) or for an affected Indian tribe shall include in his request or other submission, or at the request of the Commission, a statement of the basis of his authority to act in such representative capacity.

Dated at Washington, D.C. this 10th day of January, 1985.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

PART 60

DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN GEOLOGIC REPOSITORIES; LICENSING PROCEDURES

PETITIONS FOR RULEMAKING

48 FR 48473
Published 10/19/83
Comment period expires 11/2/83

Denial published 12/15/83.

10 CFR Part 60

[Docket No. PRM-60-1]

States of Texas, Wisconsin, Minnesota, Nevada, and Utah; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of Receipt of Petitions for Rulemaking from the States of Texas, Wisconsin, Minnesota, Nevada, and Utah.

SUMMARY: The Nuclear Regulatory Commission is publishing for public comment this notice of receipt of a petition for rulemaking dated September 2, 1983, which was filed with the Commission by the States of Texas, Wisconsin, Minnesota, Nevada, and Utah. The petition was docketed by the Commission on September 6, 1983 and has been assigned Docket No. PRM-60-1. The petitioners request that the Commission amend its regulations in 10 CFR Part 60 to adopt a procedural mechanism to govern current and future concurrence in high level nuclear waste repository siting guidelines which are issued by the Department of Energy pursuant to Section 112(a) of the Nuclear Waste Policy Act of 1982.

DATE: Comment period expires November 2, 1983. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: A copy of the petition for rulemaking is available for public inspection in the Commission's Public Document Room, 1717 H Street NW., Washington, DC. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

FOR FURTHER INFORMATION CONTACT: John Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone 301-492-7086 or Toll Free: 800-368-5642.

SUPPLEMENTARY INFORMATION: The petitioner state that a rulemaking is needed to establish a procedural framework for the Nuclear Regulatory Commission to implement the concurrence requirement of Section 112(a) of the Nuclear Waste Policy Act. Section 112(a) of the Act requires the Department of Energy to issue guidelines that govern the recommendation of repository sites for the permanent storage of high-level radioactive waste. The Act further requires that the guidelines receive the concurrence of NRC.

The petitioners propose that the text of the proposed rule read as follows:

Siting Guidelines Concurrence

(a) As soon as possible following the issuance by the DOE of the proposed final guidelines for the recommendation of sites for nuclear waste repositories pursuant to Section 112(a), Nuclear Waste Policy Act of 1982, the Secretary of Energy shall submit to the Director [of the Nuclear Regulatory Commission's Office of Nuclear Material Safety and Safeguards] a request for concurrence which includes: (1) A request that the Commission concur in the form and substance of the proposed final guidelines; (2) a description of the technical rationale behind the objectives established in the proposed final guidelines; (3) a full description of the entire decision process by which the guidelines were drafted; and (4) a list of any issues related to repository recommendation which the DOE desires the Commission to review in connection with the proposed final guidelines.

(b) The Director shall cause to be published in the **Federal Register** a notice that (1) a DOE request for concurrence has been received, (2) a staff review of the request and the proposed final guidelines has been initiated, and (3) copies of the request and proposed final guidelines are available upon request. Additionally, the Director shall transmit copies of the request and proposed final guidelines to the governor, the state legislature, and the tribal council of any affected Indian tribe for each state with a potentially affected site.

(c) The Director shall prepare a draft guidelines analysis which (1) evaluates the proposed final guidelines with reference to all applicable Commission policies and requirements, (2) recommends which such guidelines should receive concurrence and which should not, and (3) sets forth the rationale for each concurrence of nonconcurrence. The Director shall cause to be published in the **Federal Register** a notice of availability of the draft guidelines analysis along with a request for public comment. Copies of the draft guidelines analysis shall be transmitted to the governor, the state legislature, and the tribal council of any affected Indian tribe for each state with a potentially affected site.

(d) A period of not less than 60 days shall be allowed for comment on the draft guidelines analysis. The Director shall then prepare a final guidelines

analysis which shall take into account comments received and any additional information acquired during the comment period. The final guidelines analysis shall complete the evaluation, recommendation, and rationale components of the draft analysis, and shall include a response to the public comments received. Thereupon, the Director shall transmit the final guidelines analysis to the Commission for consideration. Copies of the final guidelines analysis shall be transmitted to the governor, the state legislature, and the tribal council of any affected Indian tribe for each state with a potentially affected site. The Commission in its discretion may conduct a public hearing to receive public comment relative to Commission consideration of the final guidelines analysis.

(e) On the basis of the Director's final guidelines analysis, the public comment, and any other pertinent information in the administrative record, the Commission shall decide by a vote of its members to concur or to withhold concurrence with the DOE proposed final guidelines. The Commission shall cause to be published in the **Federal Register** the text of its order of concurrence or nonconcurrence.

(f) The procedures described in paragraphs (a) through (e) of this Section pertaining to the Commission's concurrence on DOE proposed final guidelines shall apply equally to any subsequent revisions proposed by DOE regarding such guidelines.

The petitioners state that the adoption of the formalized concurrence mechanism to carry out the statutory requirement is necessary for the following reasons:

1. *The proposed rule promotes NRC's distinctive role under the Nuclear Waste Policy Act:* The Act 42. U.S.C. 10101 et seq., reveals that Congress intended NRC involvement and participation throughout the entire site selection process for a high level nuclear waste repository. The underlying purposes for NRC's involvement in the site selection process are (a) to enhance the licensability of the repository sites recommended by DOE and (b) to fulfill NRC's regulatory responsibility for the protection of the public health and safety and the environment.

2. *The proposed rule is a necessary and desirable means to promote NRC's distinctive role in guidelines development.* The proposed rule will establish a thorough and open process whereby the NRC can bring its expertise and responsibility to bear on the siting guidelines. By calling for notice and comment on the staff's concurrence analysis, the proposed rule provides the interested public the opportunity to offer recommendations which will ensure that the final version of the guidelines reflects NRC policies as well as those of DOE.

3. *NRC concurrence is rulemaking or its equivalent.* The Act of NRC's concurrence or nonconcurrence in the Section 112(a) guidelines amounts to an act of rulemaking. Adoption of the guidelines by DOE is being treated as rulemaking. The guidelines fit the Federal Administrative Procedure Act definition of a rule found at 5 U.S.C. 551 (4). Accordingly, an equivalent rulemaking process should attend NRC concurrence in the guidelines.

Finally, the petitioners states that the proposed concurrence rule injects no newfangled scheme into NRC administrative procedures and bears close resemblance to the existing NRC rule 10 CFR 60.11 pertaining to NRC oversight of DOE site characterization for high level waste repositories. Thus the petitioners merely propose that a familiar procedure in a closely related matter be adopted for use in connection with guidelines concurrence.

In the petition (which consists of a 13-page brief), the petitioner provides additional justification and support for the requested proposed rule not included in the **Federal Register** notice. Members of the public interested in filing comments on PRM–60–1 can obtain a copy of the petition by writing to the address noted above.

Dated at Washington, DC, this 14th day of October 1983.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

48 FR 55745
Published 12/15/83

10 CFR Part 60

[Docket No. PRM 60–1]

States of Texas, Wisconsin, Minnesota, Nevada and Utah; Denial of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Denial of Petition for Rulemaking.

SUMMARY: The Nuclear Regulatory Commission ("NRC") or "Commission") denies a petition for rulemaking filed by the States of Texas, Wisconsin, Minnesota, Nevada and Utah ("Petitioners"). The Petitioners requested that the Commission amend 10 CFR Part 60 to adopt certain procedures for NRC concurrence in siting guidelines for high-level radioactive waste repositories proposed by the Department of Energy ("DOE") pursuant to Section 112(a) of the Nuclear Waste Policy Act of 1982 ("NWPA"). The Commission finds that the proposed procedures are not required by either the NWPA or the Administrative Procedure Act ("APA"). The Commission believes that the petitioners' concerns regarding public participation in the Commission's concurrence process will be adequately addressed by the previously announced opportunity to publicly address the Commission on DOE's proposed guidelines. 48 FR 39536 (August 31, 1983)..

ADDRESSES: Copies of correspondence and documents cited below are available for public inspection at the Commission's Public Document Room at 1717 H Street, NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Mr. Sheldon L. Trubatch, Office of the General Counsel, U.S. Nuclear Regulatory Commission, 1717 H Street, NW., Washington, DC, 20555, (202)–634–3224.

SUPPLEMENTARY INFORMATION: On September 2, 1983, Mr. Ken Cross, an Assistant Attorney General for the State of Texas, on behalf of the States of Texas, Wisconsin, Minnesota, Nevada and Utah ("Petitioners"), petitioned the Commission to adopt a proposed rule that would have established procedures for public participation in the Commission's concurrence in DOE's siting guidelines for high-level radioactive waste repositories.

The Commission is mindful of the importance of its role to concur in the DOE guidelines and recognizes the petitioners' interest in the guidelines. However, the Commission believes that the opportunity for oral presentation to the Commission will provide an adequate opportunity for petitioners to express their concerns and for the Commission to understand those concerns.

The benefits of oral presentation include the discipline imposed on the participants to focus their concerns and the opportunity for give-and-take between the participants and the Commissioners. Additional opportunity for written comment as petitioners propose might enlarge the body of information before the Commission; however, this fact must be weighed against the time it would take to complete the procedures in this case because the NWPA objectives include timeliness. On the basis of its experience with rulemakings, the Commission believes that the procedures could not be completed in less than 9–12 months.

Therefore, given the opportunity for oral and written presentation to the Commission, the record of public

participation before DOE, and the interest in a timely (and fair) concurrence process, the Commission denies the petition.

The Petition

The text of Petitioners' proposed rule appears at 48 FR 48473–74 (October 19, 1983).[1] Essentially, Petitioners proposed that the Commission adopt the following steps in its process for concurring in DOE's siting guidelines:

1. A DOE request for NRC concurrence on proposed guidelines would be supported by: (a) A description of the technical rationale behind the guideline objectives; (b) a full description of DOE's decision process; and (c) a list of issues for which DOE wishes Commission review.

2. NRC would publish notice of receipt of DOE's request along with an NRC staff review of that request. Copies would also be provided to affected States and Indian tribes.

3. Subsequently, the NRC staff would publish for comment a draft analysis of the proposed guidelines. Affected States and Indian tribes would also be asked to comment.

4. After a comment period of at least 60 days, the NRC staff would publish a final analysis of the guidelines and provide copies directly to the affected States and Indian tribes. The Commission could then offer a discretionary public hearing on the staff's final analysis.

5. The Commission would then decide on whether or not to concur in DOE's proposed guidelines.

These procedures would also apply to any DOE proposals to revise the siting guidelines.

Bases for Request

DOE has notified three of the petitioners, the States of Texas, Nevada and Utah, that they have within their borders one or more potentially acceptable sites for the first high-level radioactive waste repository. These States believe that this circumstance provides them with an interest in a formalized mechanism by which they can participate in the NRC concurrence process. DOE has informed the other two petitioners, the States of Wisconsin and Minnesota, that they are potential candidates for a second waste repository. Accordingly, these States are also interested in participating in the NRC's concurrence in DOE's guidelines and in any proposed amendments to those guidelines.

Petitioners discussed three reasons supporting their belief that the NRC should adopt the proposed formalized concurrence procedure: (1) The procedures will promote NRC's distinctive role under the NWPA; (2) NRC concurrence is rulemaking or its equivalent; and (3) the procedures are familiar and useful.

1. *The Procedures Will Promote NRC's Role Under NWPA.* Petitioners contend that the NRC's concurrence role under the NWPA indicates a congressional intent to attach special significance to NRC's concurrence in DOE's siting guidelines. Petitioners believe that their proposed rule will promote that congressional intent. Petitioners also contend that their proposed rule is a necessary and desirable means for promoting the NRC's distinctive role in developing the guidelines. They argue that by providing for public participation in the concurrence process, the proposed rule will help to ensure that the siting guidelines reflect NRC policies because the public will have an opportunity to point out inconsistencies between the guidelines and NRC's technical licensing regulations.

2. *NRC Concurrence is Rulemaking or its Equivalent.* Petitioners contend that the act of concurrence or non-concurrence is an act of rulemaking subject to the notice and comment procedures of the APA. In Petitioners' view, NRC's concurrence is an act of adoption of DOE's guidelines sufficient to make them an NRC rule. Accordingly, Petitioners believe that their proposed rulemaking procedures would satisfy the NRC's obligations under the APA to conduct a rulemaking on concurrence.

3. *The Procedures are Familiar and Useful.* Petitioners believe that their procedures closely resemble those in 10 CFR 60.11 for NRC oversight of DOE site characterization of high-level waste repositories. Petitioners also believe that their proposed procedures would be useful because they would apply also to any proposed amendments to the siting guidelines.

Comments on the Petition

On October 19, 1983 the Commission published the text of the petition and a request for comments on it in the **Federal Register**, 48 FR 48473. Although the comment period closed on November 2, 1983, the notice provided that late comments would be considered if it was practical to do so. The Commission received 17 letters of comment in response to the notice, including one late comment that it was able to consider.[2]

Seven commenters opposed the proposed rule: the American Nuclear Energy Counsel ("ANEC"); the Atomic Industrial Forum's Subcommittee on High-Level Radioactive Waste ("AIF"); the Edison Electric Institute joined by the Utility Nuclear Waste Management Group ("EEI/UNWMG"); Duke Power Company ("Duke"); the U.S. Department of Energy ("DOE"); Middle South Services, Inc. ("MSS"); and Carolina Power and Light Company ("CP&L").

ANEC, the AIF and MSS contended that the NWPA does not require or support the proposed procedures. MSS stated its belief that if Congress had wanted formal rulemaking procedures for NRC concurrence it would have required such procedures. Because Congress did not so provide, MSS and ANEC concluded that such procedures would contradict Congress' intent that the guidelines be established expeditiously only 180 days after enactment of the NWPA. EEI/UNWMG and CP&L believe that the public meeting which the Commission has stated it will hold prior to a decision on concurrence serves to promote the NRC's distinctive role under the NWPA as well as the Petitioners' need to present their views directly to the Commission.

Most commenters opposing the petition noted that the Commission, in response to a similar petition filed by the Yakima Indian Nation, had already rejected the contention that concurrence was rulemaking for the purposes of the APA. They also contended that a

[1] Attached to the comment submitted by the Department of Energy and Transportation of the State of Mississippi is a copy of a letter to the Commission dated September 13, 1983 giving notice of that State's intent to join the State of Texas as a co-petitioner and suggesting a modification to the proposed rule to add a public hearing on any NRC draft analysis of DOE's guidelines. The Commission has no record of receiving that letter before it received Mississippi's comment (dated November 1, 1983). Thus, the Commission received Mississippi's proposal too late to treat it as part of the petition. Moreover, the State of Mississippi did not inform the Commission that the NRC's October 12, 1983 notice of receipt of the Petitioners' petition for rulemaking made no mention of the State of Mississippi's September 13, 1983 letter. In any event, the Commission believes that publication of the State of Mississippi's proposal would not have significantly affected the comments received. Indeed, the Southwest Research Information Council, Serious Texans Against Nuclear Dumping and People Opposed to Wasted Energy Repository commented on the State of Mississippi's proposal. In considering these comments, the Commission treated Mississippi's proposal as a comment on the petition. The Commission's decision to deny the petitioners' petition does not depend on the fine-tuning of procedural proposals. Rather, it is based on the Commission's determination that the proposed procedures are not legally required and would result in delay contrary to the public interest. Under these circumstances, the Commission determined that Mississippi's suggestion could be addressed without publication, especially in light of the Commission's having the benefit of comments supporting that suggestion. Because the State of Mississippi's proposal would have added even more procedures to the NRC's concurrence process, those additional procedures must also be rejected for the same reasons.

[2] The Commission also received 3 mailgrams from private citizens in Mississippi who stated their support for the petition submitted by the Department of Energy and Transportation of the State of Mississippi. As noted above, the Commission is denying that petition as well because it requested procedures beyond those that the Commission has already determined are unnecessary and contrary to the public interest.

separate NRC rulemaking on concurrence would be redundant, time-consuming and wasteful of resources. DOE noted that its extensive public comment process on the guidelines has already aired the issues which the Commission will consider in determining whether to concur in those guidelines. And Duke noted that DOE has provided all those public comments to the Commission. Accordingly, these commenters concluded that Petitioners' proposed procedures were neither necessary nor desirable because they were redundant.[3]

Ten commenters supported the proposed rule: the Yakima Indian Nation; the State of Mississippi Department of Energy and Transportation; the Natural Resources Defense Council ("NRDC"); Hector & Associates representing Serious Texans Against Nuclear Dumping and People Opposed to Waste Energy Repository ("STAND/POWER"); POWER; the Southwest Research and Information Center ("SRIC"); the Nebraska Energy Office; Citizen Alert; the State of Wisconsin Department of Justice; and the Texas House-Senate Joint Study Committee on Hazardous Waste Disposal. Several of these commenters contended that concurrence is rulemaking.[4] They also stated that the proposed procedures would provide a better procedural framework than a public hearing for informing the Commission of the public's concerns.[5] This is especially so because they believe that DOE has made numerous material changes to the proposed guidelines since the last opportunity for public comment to DOE. NRDC believes that DOE's most recent changes to the guidelines warrant an opportunity to provide written comments to the Commission. Some commenters believe that the proposed procedures would promote NRC's distinctive concurrence role under the NWPA, and would guarantee public participation in that concurrence. STAND/POWER, SIRC, and the State of Wisconsin Department of Justice urged that the establishment of these procedures now would provide a consistent procedure for the Commission's consideration of modifications to the guidelines. These commenters believe that such modifications will be necessary after EPA promulgates final repository standards under Section 112(a) of the NWPA and before the guidelines can be applied to the second repository.

Commission Decision

For the following reasons, the Commission denies the Petitioners' request for rulemaking.

1. NRC's Role Under NWPA

There is no doubt that Congress' upgrading the NRC's role from consultation to concurring in the guidelines indicates a congressional intent to create a special role for the NRC in the promulgation of DOE's siting guidelines. However, Petitioners have failed to identify any basis for their belief that their proposed rule will promote that congressional intent. If Congress had wanted the concurrence process to be a public rulemaking, it could have easily so required.[6] Rather, Congress gave DOE 180 days to develop siting guidelines and to obtain the NRC's concurrence in them. This schedule expresses a clear congressional intent that the guidelines were to be completed expeditiously. Since concurrence is only the final stage of the lengthier process of developing the guidelines, Congress could not have intended the NRC's concurrence process to be a lengthy public proceeding.

The Petitioners also appear to believe that their request for formal procedures is supported by the special role of potential host States under the NWPA. That Act does give potential host States special consideration in specific steps of the repository development process. But nothing in the NWPA suggests that these States have a special role in the NRC concurrence process that would mandate the use of formal procedures.

Petitioners further suggest that their proposed procedures will help to ensure that the guidelines reflect NRC policies and are consistent with NRC rules. The Commission believes that the primary purpose of public comments is to help the NRC formulate its policy rather than to determine consistency of the guidelines with NRC regulations. However, as discussed below, at the public meeting the Commission will also entertain comments on the consistency of DOE's siting guidelines with the NRC's requirements in 10 CFR Part 60. Because both of these purposes can be accommodated at the public meeting, there is no need for the lengthier, more formal concurrence procedures proposed in the petition.

For these reasons, the Commission finds that nothing in NWPA supports Petitioners' proposal.

2. NRC Concurrence As Rulemaking

The NRC has already considered and rejected this proposition in its response to the petition by the Yakima Indian Nation. 48 FR 39536 (August 31, 1983). Neither the Petitioners nor any commenter has provided any additional support for this proposition. Accordingly, the Commission finds no basis for reconsidering its previous decision rejecting this proposition as unfounded.

3. Familiarity and Usefulness of the Procedures

Petitioners' contention that the proposed procedures are familiar does not support the adoption of those procedures in the absence of a showing of necessity or utility.[7] These procedures are not the only means for public participation in the concurrence process; other less time-consuming and less complex procedures, such as the established public meeting, provide adequate opportunity for public participation. As for utility, Petitioners' argument is that these procedures could be applied to any proposed amendments to the siting guidelines. The Commission believes it would be premature to establish procedures now for NRC concurrence in any amendments to the guidelines. Before doing so, the Commission would want to evaluate the effectiveness of the procedures used in determining whether to concur in the

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[3] DOE also stated that NRC concurrence is required by the end of 1983 if DOE is to meet the statutory deadline of January 1, 1985 for recommending three sites to the President for characterization. While the Commission recognizes DOE's legitimate desires to conform to time schedules in the NWPA, DOE's position is not properly included in the bases for the Commission's decision. The Commission's decision here cannot be based on the assumption that it will concur in DOE's guidelines by any particular time.

[4] The State of Wisconsin Department of Justice took the position that unlike the petition by the Yakima Indian Nation, adoption of the procedures proposed by this petition does not depend on the conclusion that the Commission's concurrence is rulemaking. Rather, Wisconsin stated that this petition is premised on the State's belief that formalized procedures are necessary to ensure public participation in the NRC's concurrence process. As discussed in this decision, such formalized procedures are not legally necessary, are not required in light of the Commission's previous decision to permit public participation in the concurrence process, and are not desirable because they would unnecessarily delay the concurrence process.

[5] SRIC and STAND/POWER also suggested that the Commission distribute directly to interested members of the public any NRC staff analysis of DOE's guidelines, and Citizen Alert suggested that the NRC hold public hearings in DOE target States. As discussed above at note 2, the Commission's decision does not depend on fine-tuned procedural proposals. Rather, the Commission has found contrary to the public interest any elaborate procedures that would unduly delay its decision on whether to concur in DOE's guidelines. Moreover, the Commission has recently requested prospective participants in the public meeting on the guidelines to identify their representatives. 48 FR 50432 (November 1, 1983). Any persons who will not be able to attend that meeting will still have an opportunity to express their views by submitting them to those representatives.

[6] See, for example, Section 404 of the Department of Energy Organization Act of 1977, 42 U.S.C. 7174.

[7] Petitioners' proposal is also undesirable because it would interfere with the staff's role as advisor to the Commission by requesting third-party comment on its decisions. But the staff has the principal expertise to evaluate DOE's proposals and the Commission intends to use the staff's evaluation as a basis for its decision. Thus, the Commission believes that the staff should remain an integral part of the agency decisionmaking team and should participate directly in advising the Commission on whether to concur.

guidelines. If and when DOE proposes amendments to the guidelines, the Commission will then determine what procedures may be appropriate for its concurrence process.

Finally, the Commission believes that the forthcoming public meeting on the proposed guidelines and written comment period on the Commission's proposed concurrence decision will provide an adequate forum for public participation in the Commission's concurrence process. Neither the Petitioners nor the commenters have provided any basis for reaching a contrary conclusion. Even if, as some commenters claim, DOE has materially changed the guidelines since last soliciting public comment, the participants in the Commission's meeting will have time to study DOE's final proposed guidelines before meeting with the Commission. In addition, the NRC, in a companion **Federal Register** notice published elsewhere in today's **Federal Register**, setting the schedule for the public meeting with the Commission, has identified the issues that the NRC staff believes are important to the Commission's decision. For the most part, these issues are familiar to the participants in DOE's rulemaking proceeding because the NRC has raised them before in its comments. Of course, participants may also raise any other issues they believe that the Commission should consider. Moreover, the Commission has agreed to issue for public comment its proposed decision regarding concurrence in the DOE guidelines. Thus, the public will have ample opportunity to bring to the Commission's attention any perceived problems with DOE's final version of the guidelines and to address the issues uniquely of concern to the Commission in its concurrence role.

Denial

After carefully considering the petition and comments on it, the Commission, for reasons stated above, hereby denies the petition for rulemaking in Docket No. PRM 60-1. The Commission believes that it can best implement Congress' intent for the expeditious promulgation of siting guidelines and provide for public participation by providing the informal public meeting announced in response to the Yakima Petition.

A copy of the petition for rulemaking and copies of the letters of comment and of the Commission's letter of denial are available for public inspection at the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C.

Although Commissioner Asselstine agrees with the denial of the petition, he would have preferred a somewhat different approach for obtaining public comments than that adopted by the Commission. Commissioner Asselstine would have required the NRC staff to prepare and make available for public comment the staff's evaluation of the DOE guidelines and its recommendation on the Commission's concurrence decision *before* the Commission's public meeting. He believes that this approach would have provided a more focused basis for comments by the participants in the public meeting and would have provided a more meaningful opportunity for public participation in the NRC concurrence process.

Commissioner Gilinsky concurs in the result and agrees with Commissioner Asselstine's comment.

Dated at Washington, D.C., this 9th day of December, 1983.

U.S. Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

≫50 FR 18267
Published 4/30/85
Comment period expires 7/1/85

10 CFR Part 60

[Docket No. PRM-60-2]

States of Nevada and Minnesota; Filing of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of Receipt of Petiton for Rulemaking from the States of Nevada and Minnesota.

SUMMARY: The Nuclear Regulatory Commission is publishing for public comment this notice of receipt of a petition for rulemaking. This petition, filed by the States of Nevada and Minnesota, and dated January 21, 1985, was docketed by the Commission on January 28, 1985, and assigned Docket No. PRM-60-2. The petitioner requests that the Commission adopt a regulation governing the implementation of certain environmental standards which have been proposed by the Environmental Protection Agency.

DATE: Comment period expires July 1, 1985. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

ADDRESSES: All persons who desire to submit written comments concerning the petition for rulemaking should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

Single copies of the petition may be obtained free by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

The petition, copies of comments, and accompanying documents to the petition may be inspected and copied for a fee at the NRC Public Documents Room, 1717 H Street, NW, Washington, DC.

FOR FURTHER INFORMATION CONTACT: John Philips, Chief, Rules and Procedures Branch, Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: 301-492-7086 or Toll Free: 800-368-5642.

SUPPLEMENTARY INFORMATION:

Background

I. Statement of Grounds and Interest

The State of Nevada filed this rulemaking petition as a state notified pursuant to the Nuclear Waste Policy Act (NWPA), that a potentially acceptable site for a repository has been identified within the state.

The State of Nevada avers that it may become affected for purposes of participation in site characterization, pursuant to section 113 or the NWPA. The State of Minnesota joins this petition as a state informed that it is being considered for site characterization for second repository. The State of Minnesota avers that it may be directly affected by the substance of standards for the development of repositories. The States of Nevada and Minnesota ground this petition on their respective interest in, and the prevailing responsibility for, the protection of the future health and safety of their citizens.

II. Statement in Support of Petition

The petitioner notes that the NWPA, enacted by Congress on December 20, 1982, and approved by the President on January 7, 1983, requires that the President recommend a first, high-level nuclear waste respository location to Congress by March 31, 1987 (section 114(a)(2)(A), 42 U.S.C. 10134(a)(2)(A)) or March 31, 1988, if he determines an extension is necessary (section 114(a)(2)(B), 42 U.S.C. 10134(a)(2)(B)). The Nuclear Regulatory Commission (Commission) must act upon an application for construction authorization for that repository by January 1, 1989, or within three years of the application's filing (section 114(d)(1), (2), 42 U.S.C. 10134(d)(1), (2)). The President's recommendation must be based upon Department of Energy (DOE) site characterization at a site which must have been recommended by January 1, 1985 (section 112(b)(1)(D), 42 U.S.C. 10133(b)(1)(D)). Site characterization must be performed

pursuant to a plan reviewed by the Commission and the affected state (section 113(b)(1), 42 U.S.C. 10133(b)(1)) before characterization begins. That plan must include criteria to be used by DOE to determine the "suitability of such candidate site for the location of repository, developed pursuant to (section 112(a);" (section 113(b)(1)(A)(iv); 42 U.S.C. 10133(b)(1)(A)(iv)). DOE's section 112(a) guidelines, as concurred in by the Commission on June 22, 1984 (49 FR 28130) require that evidence used to apply those guidelines include "analysis of expected repository performance to assess the likelihood of demonstrating compliance with 40 CFR Part 191 and 10 CFR Part 60. . . ." Section 121(a) of the NWPA requires Environmental Protection Agency (EPA) to promulgate by rule, not later than one year after the date of the enactment of the NWPA, or January 7, 1984, "generally applicable standards for protection of the general environment from offsite releases from radioactive material in repositories." The EPA published a proposed rule, "Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes" on December 29, 1982 (47 FR 58196). The proposed rule contained a section entitled "Assurance Requirements—40 CFR 191.14." According to petitioner, such assurance requirements are clearly "generally applicable standards" within the meaning of section 121(a) of NWPA.

In response to its published notice of proposed rulemaking, EPA received objections regarding the authority of EPA to promulgate the proposed "Assurance Requirements." These objections were based on legal arguments that section 121(a) of the NWPA specifically clarifies that EPA's authority to promulgate the proposed rule arises "under other provisions of law." Those "other provisions of law" include the Atomic Energy Act of 1954, as amended and the President's Reorganization Plan No. 3 of 1970. According to petitioner, the essence of the objection was that Reorganization Plan No. 3 placed within the Federal Radiation Council, which is no longer in existence, rather than EPA, the authority for requirements such as those contained within proposed 40 CFR 191.14.

The statutory deadline for the promulgation of the EPA standards has passed without promulgation of the standards. Petitioner states that the primary reason for that failure is the jurisdictional dispute over EPA's authority to issue the requirements contained in 40 CFR 191.14. The petitioner states that because proposed 40 CFR 191.14 contains generally applicable standards for the protection of the general evironment for offsite releases from radioactive materials in repositories, the EPA should proceed to finalize 40 CFR Part 191. It is also argued that DOE could not make nomination decisions or recommendations for characterization until EPA standards are final.

Petitioner asserts that disputes as to the question of authority preclude EPA from issuing its final standards. The petitioner states further that the general authority of the Commission to protect the health and safety of the public against radiation hazards under the Atomic Energy Act endows the Commission with the power to enact regulations of the nature contained in proposed 40 CFR 191.14 notwithstanding the question over EPA's authority. Therefore, the petitioner suggests that since no objections have been raised regarding the substance of proposed 40 CFR 191.14, and because the proposed rule does provide confidence that the containment requirements of 40 CFR 191.13 would be met by a repository, the NRC should enact under its authority the proposed regulations originally published by EPA on December 29, 1982 (47 FR 58196), thereby removing the jurisdictional issue as an impediment to the EPA"s promulgation of the proposed section. According to the petition, once this impediment is removed, the EPA could move to final adoption of its rule. The petition also recites certain proposed Commission findings, including a finding that the EPA's standards must be final before environmental assessments can be finally published and before DOE may nominate a site or recommend a site for characterization.

III. Conclusion

The assurance requirements referred to by the petitioner have been the subject of prior consideration by the Commission. As a result of such consideration, the Commission on May 17, 1984, directed the staff to continue discussions with EPA on those assurance requirements, with the objective of coming to a mutual agreement on provisions that could be incorporated into 10 CFR Part 60.[1] If the NRC and EPA staffs arrive at such agreement, appropriate rule changes will be recommended to the Commission. If approved by the Commission, such changes will be published in the Federal Register. There would be an opportunity for further public comment before the final amendments are adopted.

As a matter of orderly administrative procedure, the Commission may elect to continue its efforts to resolve any outstanding differences with EPA, and to deny the instant petition. This would avoid duplicative, and indeed possibly conflicting, rulemaking activities. The issues raised in the petition would not be disregarded, but would, on the contrary, be considered in the development of rules acceptable to EPA which the Commission may propose for adoption. Commenters are invited to express their views as to the appropriateness of this course of action.

Dated at Washington, DC this 25th day of April, 1985.

For the Nuclear Regulatory Commission.

John C. Hoyle,

Assistant Secretary of the Commission.

[1] The Commission directive to the staff, along with other pertinent materials, has been placed in the file of this proceeding.

PART 60

DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN GEOLOGIC REPOSITORIES; LICENSING PROCEDURES

STATEMENTS OF CONSIDERATION

46 FR 13971
Published 2/25/81
Effective 3/27/81

10 CFR Parts 2, 19, 20, 21, 30, 40, 51, 60, and 70

Disposal of High-Level Radioactive Wastes In Geologic Repositories: Licensing Procedures

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (Commission or NRC) is publishing a final rule on the disposal of high-level radioactive wastes at geologic repositories. The rule sets forth requirements applicable to the Department of Energy for submitting an application for a license and specifies the procedures which the Commission will follow in considering such an application. The rule also sets forth provisions for consultation and participation in the license review by State, local, and Indian tribal governments.

EFFECTIVE DATE: March 27, 1981.

FOR FURTHER INFORMATION CONTACT: I. C. Roberts, Assistant Director for Siting Standards, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 443–5985.

SUPPLEMENTARY INFORMATION:

Background

On December 6, 1979, the Nuclear Regulatory Commission published for comment a proposed rule setting forth procedures for licensing geologic high-level radioactive waste (HLW) repositories to be constructed and operated by the Department of Energy (DOE) (44 FR 70408). The proposed rule superseded the proposed General Statement of Policy published for comment in November 1978 (43 FR 53869). Public comment on the proposed rule (10 CFR Part 60) was received from thirty-four groups and individuals. A number of changes and clarifications have been made in the rule as a result of comments received. This rule contains only the procedural requirements for licensing. The technical criteria against which the license application will be reviewed are still under development. The current staff thinking on the technical criteria was reflected in an Advance Notice of Proposed Rulemaking and draft technical criteria published for public comment on May 13, 1980 (45 FR 31393).

The Commission has made a formal determination that the final rule 10 CFR Part 60 satisfies the criteria for the approval of significant regulations set out in section 2(d) of Executive Order 12044.

Authority

Sections 202 (3) and (4) of the Energy Reorganization Act of 1974, as amended, provide the NRC with licensing and regulatory authority regarding DOE facilities used primarily for the receipt and storage [1] of the high-level radioactive wastes resulting from activities licensed under the Atomic Energy Act and certain other long-term, high-level waste storage facilities of the DOE. Pursuant to that authority, the Commission is promulgating regulations appropriate for licensing geologic disposal of HLW by the DOE. The requirement in the rule that DOE submit a Site Characterization Report in advance of performing exploration activities also implements Section 14(a) of the NRC Authorization Act of 1979 (Pub. L. 95–601).[2] DOE is responsible for developing the methods and technology for the permanent disposal of high-level radioactive waste in a Federal repository, and for submitting a license application for a potential repository. The licensing procedures in this rule will be supplemented by technical criteria which will be developed by the Commission in the light of such generally applicable environmental standards as may have been established by the Environmental Protection Agency under Reorganization Plan No. 3 of 1970.

Questions have been raised in the past about the authority of NRC to regulate the construction of the waste repository. DOE activities that take place before an application if filed and may affect the long-term safety of the repository obviously may preclude receipt of a construction authorization. The Commission has concluded that NRC may use its powers to regulate construction of the repository. Accordingly, the Commission may, if necessary, issue orders to secure compliance with construction authorization conditions and to protect the integrity of the repository. In addition, failure to comply with the conditions of any construction authorization may also be grounds for denial of a license to receive material.

Comments

A total of thirty-four groups and individuals commented on the proposed rule, addressing a variety of issues. Most of the commenters viewed the proposed rule as a significant improvement over the proposed General Statement of Policy, and, generally, the comments were supportive of the principles and procedures outlined in the proposed rule. The principal comments received related to multiple site characterization, in situ testing at depth, cost estimates for site characterization, whether the rule should require that the site selected by DOE be the "best", whether an environmental impact statement (EIS) should be required for site characterization, whether the Commission should prepare an EIS for this rulemaking action, opportunities for

[1] The Commission interprets "storage" as used in the Energy Reorganization Act to include disposal.

[2] Section 14(a) reads as follows: Any person, agency, or other entity proposing to develop a storage or disposal facility, including a test disposal facility, for high-level radioactive wastes, non-high-level radioactive wastes including transuranium contaminated wastes, or irradiated nuclear reactor fuel, shall notify the Commission as early as possible after the commencement of planning for a particular proposed facility. The Commission shall in turn notify the Governor and the State legislature of the State of proposed situs whenever the Commission has knowledge of such proposal.

State, local and public participation, formal public hearings, the preliminary nature of some information to be included in an application for construction authorization, and the termination of a license following decommissioning. Summaries of the comments received on these issues are presented below. Copies of the comments and an analysis of them by the NRC staff are available in the Commission's Public Document Room. Some of the commenters raised issues that will be covered in the technical criteria: those will be dealt with in connection with the ongoing rulemaking for those criteria.

a. *Site Characterization.* Comments on site characterization straddled the Commission position set forth in the proposed rule. Some commenters agreed with the requirement for multiple site characterization as presented in the proposed rule. Some commenters expressed the opinion that multiple site characterization was not required for the Commission to fulfill its NEPA obligation to consider alternatives. The Commission has carefully reviewed arguments presented by the commenters who stated that multiple site characterization is not necessary. The Commission continues to believe that required multiple site characterization provides the only effective means by which it can make a comparative evaluation as a basis for arriving at a reasoned decision under NEPA. Other commenters believed that the requirements for multiple site characterization were not stringent enough, and suggested that the rule specify the number of geologic media and sites to be characterized by the DOE. The Commission continues to believe that characterization of several sites will prevent a premature commitment by DOE to a particular site, and will assure that DOE's preferred site will be chosen from a slate of candidate sites that are among the best that can reasonably be found. The Commission considers three sites in two geologic media, at least one of which is not salt, to be the minumum number needed to satisfy NEPA. That is, the Commission can foresee no circumstance that would permit it to conclude, on the basis of a more limited investigation, that alternatives have been considered in accordance with the "rule of reason." Further it is the present judgment of the Commission that for purposes of making a reasoned choice there is not sufficient difference between bedded salt and domed salt for them to be considered two distinct alternative media. However, because the "rule of reason" is intrinsically flexible, the Commission does not believe that it would be appropriate for these regulations to specify more than the minimum number or type of geologic media and sites that DOE must characterize during multiple site characterization. What is important is that there be sufficient information for NRC to be able to evaluate real alternatives, in a timely manner, in accordance with NEPA.

Information on plans for considering alternative sites is to be included in the Site Characterization Report. This provision was questioned by some commenters. This information is needed so that any deficiency may be the subject of "specific recommendations" by the Director of the NRC's Office of Nuclear Material Safety and Safeguards, (Director) as provided in § 60.11(e), with respect to additional information that might be needed by the Commission in reviewing a license application in accordance with NEPA.

Another commenter raised the issue that in addition to the need to consider alternatives under the provisions of NEPA, the need for characterizing several sites in a variety of media is also justified by NRC's obligation under the Atomic Energy Act to protect public health and safety. The Commission recognizes that, under the provisions of the Atomic Energy Act, a consideration of alternatives might indeed be appropriate, where necessary or desirable to protect health. (Section 161g.) The Commission cannot say at this point that an examination of alternatives would be essential for this purpose. The Commission anticipates that its fundamental licensing inquiry in the context of evaluating radiological safety issues will be directed to determining whether the activities proposed by the DOE can be carried out in a manner consistent with generally applicable environmental standards established by the Environmental Protection Agency.

The Commission also continues to believe that waste form research is an appropriate topic for treatment in the Site Characterization Report, as the discussion may lead to specific recommendations by the Director, and, as well, contribute to early examination and broader understanding of possible waste form/host rock interactions. Further, wording of § 60.11(a) has been changed from "waste form" to "waste form and packaging" to convey better the concept that the NRC will seek information relating to the interaction of the waste as emplaced (hence including packaging) with the host rock.

In response to one commenter's suggestion that the Site Characterization Report be made to NRC on a site by site basis, § 60.11(a) has been revised to require DOE to submit a separate Site Characterization Report for each site to be characterized.

There were also suggestions that the distinction between site characterization and screening activities be drawn more sharply. However, because the activities needed prior to characterization may depend on a variety of factors peculiar to the site and geologic medium, the Commission has concluded that greater precision might be unduly restrictive.

The DOE requested clarification of the term "site". Definitions of both the terms "site" and "medium" will be set forth when the technical criteria are published.

b. *In Situ Testing at Depth.* Several commenters supported the Commission view on in situ testing at depth. Some commenters, noting the importance of in situ testing at depth, suggested that the rule require the DOE to include in situ testing at depth in its site characterization program. The U.S. Geological Survey (USGS) supported required in situ testing at depth at a number of sites prior to NRC adjudicatory hearings, so that such hearings could proceed on the basis of critical, site-specific data on the candidate host rocks and environs rather than on inferences derived from a limited number of drill holes supplemented by geophysical techniques. The USGS expressed the opinion that direct observation and in situ testing of host media will be the only way to characterize sites with confidence. Several other commenters objected to the Commission suggestion that in situ testing at depth may be necessary. The possibility of in situ testing at depth after a preferred repository site has been selected was also suggested.

The Commission, like the USGS, believes that in situ testing at depth[3] is an essential technique for DOE to obtain sufficient data to determine whether and to what extent the surrounding geologic medium is suitable for hosting a geologic repository. This belief is supported by the ever-present possibility of lateral changes in the properties of the host rock and the possible presence of inhomogeneities of too small a scale to be detected by remote or borehole techniques. Moreover, in order for NRC to be able to conclude that the alternatives to DOE's preferred site are in fact reasonable alternatives for the intended purpose, in situ testing at depth is essential to characterizing alternative sites as well. The NRC will then be able to determine, after considering all relevant environmental factors as contemplated by NEPA, whether a construction authorization at DOE's

[3] The Commission interprets the phrase "in situ testing at depth" to mean the conduct of those geophysical, geochemical, hydrologic, and/or rock mechanics tests performed from a test area at the base of a shaft excavated to the proposed depth of a potential repository in order to determine the suitability of a particular site for a geologic repository.

proposed site should be issued. Thus the Commission requires in situ testing at depth in the rule. It is conceivable, however, that techniques may be developed to obtain the necessary data at a particular site without in situ testing at depth. In such a case, DOE may request an exemption from the in situ testing at depth requirement. DOE, like any applicant for an NRC license, has the burden of establishing that NRC requirements have been met; and the regulations require DOE to undertake any testing needed to determine the suitability of the site for a geologic repository. Thus, if exploration and in situ testing at depth were not undertaken, DOE would still have the same burden of obtaining and supplying to the Commission information needed to establish the suitability of the site.

c. *Cost Estimates for Site Characterization.* Cost estimates for site characterization cited in the Supplementary Information accompanying the proposed rule were regarded by some commenters as being too low. Much of the data for the cost estimate of $20 million per site was derived from the Teknekron Inc. report, "A Cost Optimization Study for Geologic Isolation of Radioactive Wastes," May 1979, prepared under contract with Battelle Pacific Northwest Laboratories. The NRC staff has reexamined its previous estimate and still believes that figure of $20 million was a realistic estimate for the "at depth" portion of the site characterization program considered at that time. Independent support of this figure has been obtained from the cost summary of $16 million for a program during 1978–1979 analogous to site characterization conducted by the Bureau of Mines at its Environmental Research Facility in Colorado.

The DOE has developed a preliminary design for an underground test facility in New Mexico at which many site characterization activities could be conducted. The estimated cost of the facility was $27 million (1980 dollars). This figure has been confirmed by American Mine Services under contract to NRC. The scope of the DOE preliminary design surpasses the extent of activities suggested for the "at depth" portion of site characterization in the proposed rule. For example, the DOE Site Preliminary Verification Project Plan includes extensive underground mining development. The Commission has come to believe, however, that a facility consisting of two shafts and up to 1,000 feet of tunnels is a more practical arrangement for conducting tests and experiments at depth for site characterization. Therefore, the Commission believes a $25–30 million figure represents the upper limit for the "at depth" portion of site characterization in soft rock. Cost estimates for site characterization including in situ testing at depth in hard rock may range up to 30% more than cost figures for soft rock.

d. *The "Best" Site.* Some commenters suggested that the final rule should require that the site selected by the DOE be the "best". Yet other commenters thought that the Commission was setting an unattainable goal of perfection for the selection of the site for a geologic repository. It remains the Commission's view that the process of multiple site characterization provides a workable mechanism by which the DOE will be able to develop a slate of candidate sites that are among the best that can reasonably be found and from which DOE will select its preferred site.

It generally has been NRC practice to consider only whether a license application meets prescribed criteria. The Commission perceives no reason to adopt a different philsosphy here.

e. *Environmental Impact Statement.* Some commenters believed that the NRC should require that the DOE submit an Environmental Impact Statement (EIS) at the site characterization stage. Other commenters believed that DOE need only submit an Environmental Report or an Envirionmental Assessment for site characterization. In its comment letter on the proposed rule, the DOE stated that a decision to bank or withdraw a site or to conduct a site characterization by more extensive methods such as sinking a shaft will require the preparation of an EIS. In any event, since NRC is undertaking no "major Federal action" in connection with site characterization, it has no statutory basis for prescribing what steps DOE must take in order to be in compliance with NEPA.

The rule requires submission of an Environmental Report along with the Safety Analysis Report at the time of application for a license. If DOE has prepared an EIS that document can be used so long as it contains the information called for by the regulation. However, NRC cannot be bound to accept judgments arrived at by DOE in its EIS.

One commenter suggested that the NRC should prepare an EIS for the rulemaking action. The Commission determined that this was not necessary as part of its review and approval of publication of the proposed rule. Instead, an Environmental Impact Appraisal was prepared for those requirements which might have environmental impacts. Those impacts were found not to be significant. This Environmental Impact Appraisal has recently been updated and no new impact was found to be significant. A copy of the updated appraisal is available for inspection and copying at the Commission's Public Document Room.

f. *State, Local, and Public Participation.* The proposed rule included detailed provisions to ensure extensive opportunities for participation by State and local governments and the general public in the review of the DOE's programs for site selection and site characterization. The consultation role of the States in reviewing applicable NRC regulations and licensing procedures, as well as participation in the licensing process, was treated explicitly in the proposed rule. However, a more formal role of "consultation and concurrence" for States was requested by some commenters. Suggestions were also made that the Commission require the DOE to solicit input from State, Indian tribal and local governments as well as from the general public prior to and during site characterization.

The Commission's views on this subject were set out at length in a report submitted to the Congress on "Means for Improving State Participation in the Siting, Licensing and Development of Federal Nuclear Facilities," NUREG–0539, March 1979, cited in the Supplementary Information accompanying the proposed rule. The concerns of the commenters on broad policy issues such as "consultation and concurrence" would require actions by parties other than the Commission. Within the context of NRC's existing authority, appropriate opportunities for meaningful State and public participation have been developed. No serious deficiencies in these opportunities have been pointed out to the NRC. In addition, the provisions of the NRC's open meeting policy set forth at 43 FR 28058 (June 28, 1978) will also be applied to the licensing of a geologic repository to the extent practicable. Under this policy, generally, all meetings conducted by the NRC technical staff as part of its review of a particular domestic license or permit application will be open to attendance by all parties or petitioners for leave to intervene in the case. The Commission strongly encourages the Director to conduct open meetings prior to a license application to the extent reasonable for matters such as periodic status reports and similar proceedings.

It should be noted, however, that proposals for intervenor funding have not been incorporated as suggested by some commenters. This question may be addressed separately in the context of rulemaking applicable to various adjudicatory proceedings, should the Commission be given statutory authority, which it now lacks, to provide such funding.

In response to commenters' suggestions, the rule has been clarified with respect to notice to and participation by Indian tribes.

g. *Public Hearings.* The issue of whether public hearings should be mandatory during the pre-licensing and/or licensing stages of geologic disposal of HLW was addressed by a numbers of commenters. Two commenters suggested that hearings be required prior to site characterization. One commenter suggested that public hearings should be held in the vicinity of a proposed site prior to the approval of a Site Characterization Report, while another commenter suggested that hearings be held prior to in situ testing at depth. It was also proposed by another commenter that public hearings be held on DOE's research and development work on waste forms. Finally, two other commenters believed that formal hearings should be mandatory prior to granting construction authorization to DOE. These issues were discussed at the time the rule was proposed. The Commission then concluded, in light of the limited information available at the site characterization stage, that formal hearings were not warranted at that point. The commenter did not deny the relevance of the policy considerations identified by the Commission, but would have balanced these considerations differently. But this is a matter of judgment, and the NRC adheres to its original position for the reasons then offered. Also, the NRC must decline to review DOE research and development programs formally. NRC's statutory authority includes "licensing and related regulatory authority" as to certain DOE facilities. Although it is important to follow DOE's program closely, the Commission would not be warranted in formalizing a review process with respect to that program.

In reviewing the procedures for formal proceedings in connection with licensing, the Commission has determined that hearings would be in the public interest prior to the granting of construction authorization. An amendment (in § 2.101(f)(8)) has the effect of mandating such hearings. In addition, hearings will be held upon the request of any interested person prior to finally granting a license to receive and possess high-level radioactive waste at a geologic repository operations area and before granting license amendments to decommission or terminate a license.

As in the case of facility licensing matters, ex parte communications would be restricted while on-the-record proceedings are pending. Because a construction authorization (unlike a construction permit) is not a license, its issuance does not constitute a final decision on the pending application. To avoid any unintended implication that the ex parte rule (10 CFR 2.780) would apply between the construction authorization proceedings and the commencement of formal proceedings prior to receipt of wastes, that rule has been amended to provide specifically that a final decision with respect to issuance of construction authorization will be deemed, unless the Commission orders otherwise, to terminate, for purposes of the ex parte rule, formal proceedings then pending before the NRC with respect to the application.

The rule has also been revised to provide that in cases involving public hearings, the initial decision of the presiding officer shall not be immediately effective. (§ 2.764.) It is further provided that even if no hearing has been held, the Director of Nuclear Material Safety and Safeguards will not issue a construction authorization, license, or significant amendment until expressly authorized to do so by the Commission. The Commission has not yet determined the specific procedures for agency review of an initial decision. It will be the Commission's intention, however, to provide expeditious action on an initial decision to avoid any undue delays in the licensing process. These changes, while not issued in direct response to commenters' suggestions, reflect sentiments that the Commission itself should be involved in major decisions on these facilities.

h. *Preliminary Nature of the Information to be Included in an Application for Construction Authorization.* A number of commenters expressed the opinion that the wording of § 60.21 did not explicitly reflect the preliminary nature of some of the information that would be available at the construction authorization stage. Some commenters believed that certain categories of information, such as emergency plans and plans for retrieval, did not seem necessary, at least in full detail, at the construction authorization stage. In view of the fact that § 60.21 must be read in conjunction with § 60.24(a), which specifies that the application "shall be as complete as possible in light of information that is reasonably available at the time of docketing," no change to the proposed rule is required. Further, § 60.24(b) specifically lists several categories of information which, where appropriate, may be left for consideration only at the state of license issuance.

i. *Termination of a License.* Two commenters opposed the provisions (§ 60.52) for the termination of a license for a repository after decommissioning. The Commission believes that there will be considerable debate regarding license termination during the period between adoption of rules and implementation of their provisions. Although the Commission could have omitted the topic altogether, it believes that some recognition of the issue is desirable so that the rule covers the entire process. It should be noted that there is no assurance under the language that the license would be terminated since a decision to do so could only be made if "authorized by law." The Commission wishes to emphasize that criteria to be used in making a decision to decommission a repository are not included in this procedural rule but will be set forth either within the technical criteria of Part 60 or as a future regulation or policy statement.

Changes

The final rule contains the following changes from the proposed rule as published in December 1979.

a. *Definition of the term "Disposal".* Commenters noted that the proposed definition of the term "disposal" embodied the contradictory concepts of "permanent emplacement" and possible retrieval for purposes other than resource value. The definition has been modified to reflect usage of the term "disposal" in the rule as the condition in which isolation is required. (§ 60.2(f))

b. *Incidental Uses of Radioactive Materials.* The DOE noted that the proposed rule could have the effect of prohibiting the use of source, special nuclear, and byproduct materials at the site during site characterization and facility construction. The DOE referred to the desirability of being able to use such materials, for example, as radiography sources and radiation monitoring test sources. There may also be a need to employ a small amount of radiactive material for in situ testing in the course of site characterization activities.

The Commission did not intend to restrict DOE's use of radioactive materials for the stated purposes, and has clarified the point by adding a new section, § 60.7, which expressly recognizes that DOE (which is exempt

from NRC licensing except as expressly required to be licensed need not be licensed for such preliminary activities. This is not an exemption under the exemption provisions of the Atomic Energy Act, but rather an interpretation of the Commission's jurisdiction under Section 202 of the Energy Reorganization Act of 1974. In other words, the "facility" that the NRC is licensing is one at which high-level radioactive wastes are actually stored. To the extent that the procedures call for earlier NRC involvement, that involvement would be undertaken with a view to long-term health and safety considerations; but during site characterization and prior to emplacement of waste, there would be no "facility" for storage of high-level waste and no basis for the exercise of licensing authority over the incidental use of source, special nuclear, and byproduct material by DOE.

Once operations at a facility have been licensed, the Commission believes it should regulate the use of all licensable materials onsite, so as to avoid fragmentation of responsibility and accountability with respect to radiological safety (particularly as it may affect occupational exposures).

The change does not respond to the DOE's additional concern that the proposed rule would prohibit construction and operation of a surface facility for the storage of spent reactor fuel at a repository site prior to issuance of a Part 60 license. Should this situation actually arise in practice, the Commission would consider granting an exemption so as to permit licensing to be carried out under other parts of NRC regulations.

c. *Site Characterization.* Following detailed consideration of public comments, the Commission has decided to require in situ testing at depth and to specify the minimum number of sites to be considered as alternatives during site characterization.

d. *Site Characterization Report.* One commenter on the proposed rule suggested that the description of the DOE's planned site characterization program include a preliminary design of the repository. Knowledge of the proposed design would help indicate how the testing program related to the repository layout. The Commission has made it explicit that the Site Characterization Report include a conceptual design of the geologic repository operations area. This is needed so as to permit analysis of certain aspects of the site characterization program. (§ 60.11(a).)

The provisions of § 60.11(a) have been modified by the addition of a footnote to indicate that information on the criteria and methods used for site selection, identification and location of alternative sites and media, and the decision process used to select the site, including means used to obtain State, Indian tribal and public views, which all can be expected to be in DOE's Environmental Impact Statement for site characterization, need not be duplicated in the Site Characterization Report, but can be incorporated by reference.

§ 60.11(e) has been modified to state explicitly that a copy of NRC's final site characterization analysis and the Director's opinion will be transmitted to DOE.

The provisions of § 60.11(g) have been changed to require DOE to permit NRC staff to visit and inspect the site and observe excavations, borings, and in situ tests as they are done. The NRC believes that such a requirement is essential for NRC to determine that site characterization activities have no adverse impacts upon site safety.

The proposed rule contained provisions which would permit the DOE to include multiple sites in a single Site Characterization Report. In response to public comment, and for the sake of clarity, the final rule requires a separate Site Characterization Report for each site to be characterized.

The Commission reiterates that the Site Characterization Report will be reviewed by the NRC staff with opportunity for public comment on the NRC staff analysis of the DOE Site Characterization Report. DOE has indicated that it will provide opportunity for public comment on its Site Characterization Report prior to submittal to the NRC. Also, the Commission continues to anticipate that it will hold local public meetings in the immediate area of the site to be characterized. These meetings will be held both to disseminate information and to obtain public input which will be factored into the final version of the staff analysis.

The period for comment on the NRC's draft site characterization analysis has been extended from a minimum of 60 days to a minimum of 90 days in response to public comment. (§ 60.11(e))

The provision concerning semiannual progress reports has been expanded so as to provide additional guidance to the DOE on the contents of those reports. (§ 60.11(g)) In addition, § 60.11(g) now contains a provision which requires DOE to provide in report form, any information related to site characterization, when requested by the Director.

The rule has been revised to permit the Director to comment at any time in writing to DOE to express views on any aspect of site characterization (§ 60.11(h)).

e. *Content of License Application.* Provisions which set forth the general information to be included in an application have been expanded to include a description of site characterization work actually conducted by DOE at all sites considered and, as appropriate, explanations of why such work differed from the description of program in the Site Characterization Report for each site (60.21(b)(5)). It is expected that such a provision will facilitate the evaluation of DOE's site characterization by the public.

f. *Construction Authorization Findings.* The necessary findings by the Commission on environmental matters (§ 60.31(c)) have been revised to conform to the language in other portions of the Commission's regulations. Contrary to the views expressed by a commenter, the Commission regards this provision as being fully consistent with the requirements of NEPA. Further specificity may be provided, however particularly with respect to the criteria for evaluating alternative sites at the time technical criteria are proposed.

The Commission has declined to modify the common defense and security finding, which one commenter characterized to be "so vague as to be of no consequence." The proposed "inimicality" findings, §§ 60.31(b) and 60.41(c), reflect the legal standards set forth in the Atomic Energy Act, in particular Section 57c.(2) thereof. The concerns here related generally to protection of classified information and materials, protection against loss or diversion of nuclear waste materials from the repository, and protection against radiological sabotage at the repository. Detailed regulations appear in other parts of this chapter on protection of classified matters and no further special provisions appear to be required for Part 60. See 10 CFR Part 2, subpart I, Part 25, Part 95. Radiation hazards associated with high-level radioactive wastes make them inherently unattractive as a target for diversion, and therefore no detailed provisions appear to be warranted at this time for protection against loss or diversion. The rule has been changed to require DOE to describe the elements of its plan to protect against sabotage. However, DOE, as a Federal agency operating under the Atomic Energy Act, has its own obligation to promote the common defense and security. Indeed, DOE is responsible under the Atomic

Energy Act for protection of materials and facilities far more sensitive from a safeguards standpoint than nuclear waste materials in a geologic repository. Therefore, the rule provides that a DOE certification that its repository operations area safeguards are equal to those at comparable DOE surface facilities shall constitute a rebuttable presumption on the question of inimicality to the common defense and security.

g. *Conditions of Construction Authorization.* The final rule specifies (§ 60.32(b)) that the construction authorization "will incorporate" conditions requiring the submission of certain periodic or special reports. This wording differs from that of the proposed rule which stated that the Commission "may, at its discretion incorporate" these conditions. The NRC agrees with a commenter that such reports will be needed and that there is no reason to reserve discretion, as the proposed rule would have done. The particulars of the conditions would, of course, depend upon the nature of the project that is to be constructed.

A new paragraph 60.32(c) has been included in the final rule to inform DOE that the construction authorization will include restrictions on subsequent changes to the features of the repository and the procedures authorized. These restrictions will fall into three categories of descending importance to public health and safety as follows: (1) those features and procedures which may not be changed without (i) 60 days prior notice to the Commission, (ii) 30 days notice of opportunity for a prior hearing, and (iii) prior Commission approval; (2) those features and procedures which may not be changed without (i) 60 days prior notice to the Commission, and (ii) prior Commission approval; and (3) those features and procedures which may not be changed without 60 days prior notice to the Commission. Features and procedures falling in category (3) may not be changed without prior Commission approval if the Commission, after having received the required notice, so orders.

Not every feature and procedure in the license application at the time the construction authorization is issued would need to be included in one of the three categories. There will be a number of matters that could be changed as construction progresses without prior notice to the Commission. Such changes would be brought to the Commission's attention when the license application is updated prior to issuance of a license to receive wastes. Also, it is contemplated that changes to features or procedures included in these categories of license conditions considered minor with respect to the public health and safety, could be made with prior notice to the Commission but without prior Commission approval.

h. *License Specifications.* The Commission has accepted a suggestion to delete a requirement for including, as license conditions, restrictions as to the location and characteristics of the storage medium. As noted by a commenter, these features may be inherent in the storage medium itself.

i. *Inspections.* The final rule contains a provision (§ 60.73(c)) requiring DOE to provide onsite office space for the exclusive use of NRC inspectors and personnel.

j. *Participation of Indian Tribes.* Several changes have been made in the rule to provide for full participation by Indian tribes in the licensing procedures. These changes generally provide that tribes shall have the same opportunities as governmental units. A new Section 60.64 provides that Indian Tribes shall have the same opportunities as States to submit proposals for their participation in the NRC review. These proposals shall be approved (and may be funded) if appropriate findings can be made concerning the contribution to be made to the licensing review. A new Section 60.65 makes it clear, however, that the Director shall endeavor to avoid duplication of effort when acting on multiple proposals, to the extent that this can be accomplished without substantial prejudice to the parties involved.

k. *Preparation of an Environmental Impact Statement prior to issuance of license to receive and possess HLW.* The requirement that the NRC prepare and circulate an EIS prior to issuing a license to receive and possess HLW has been deleted (51.5(a)(11)). Since an EIS will be prepared by NRC prior to granting construction authorization for a geologic respository operations area, it may not be necessary to prepare a second EIS. Rather, after the construction authorization stage, the NRC will perform environmental assessments, and, as appropriate, will supplement the EIS or determine that no such supplemental statement is required.

l. *Records and Tests.* The term "significant" has been deleted from Section 60.71(c)(3). The Commission requires notification of all deviations from license conditions.

m. *Definition of the term "Commission."* A definition of the term "Commission" has been added to the final rule to make it clear that in Part 60, the "Commission" means the Nuclear Regulatory Commission or its duly authorized representatives.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, Public Law 95–601 (November 6, 1978), the National Environmental Policy Act of 1969, as amended, and sections 552 and 553 of title 5 of the United States Code, notice is hereby given that the following amendments to Title 10, Chapter I, Code of Federal Regulations are published as a document subject to codification.

47 FR 13774
Published 3/31/82
Effective 4/1/82

10 CFR Parts 60, 72 and 81

Reporting, Recordkeeping, and Application Requirements

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending certain parts of its regulations to indicate that Office of Management and Budget clearance is not required for the information collection requirements contained in these parts. This action is required by the Paperwork Reduction Act of 1980.

EFFECTIVE DATE: April 1, 1982.

FOR FURTHER INFORMATION CONTACT: Steve Scott, Chief, Document Management Branch, Division of Technical Information and Document Control, Office of Administration, Telephone: (301) 492–8585.

SUPPLEMENTARY INFORMATION: The Paperwork Reduction Act of 1980 (Pub. L. 96–511; 44 U.S.C. Chapter 35) transferred the responsibility for approving the information collection requirements imposed by the Nuclear Regulatory Commission (NRC) on the public from the General Accounting Office (GAO) to the Office of Management and Budget (OMB). The Act requires that each agency "ensure that information collection requests required by law or to obtain a benefit, and submitted to nine or fewer persons, contain a statement to inform the person receiving the request that the request is not subject to the requirements of section 3507 * * *" of the Act. This requirement applies to the reporting, recordkeeping, and application requirements contained in NRC regulations on the licensing procedures for disposal of high-level radioactive

wastes in geologic repositories (Part 60); licensing requirements for the storage of spent fuel in an independent fuel spent storage installation (Part 72); and standard specifications for the granting of patent licenses (Part 81). The information collection requirements contained in each of these parts pertain to nine or fewer persons. Therefore, the NRC is not required to obtain OMB approval for these information collection requirements. This document adds a new section to the General Provisions of each part to indicate that OMB approval is not required.

Because these are nonsubstantive amendments dealing with minor procedural matters, good cause exists for finding that the notice and comment procedures of the Administrative Procedure Act (5 U.S.C. 553) are unnecessary and for making the amendments effective upon publication.

Under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 552 and 553, the following amendments to 10 CFR Parts 60, 72, and 81 are published as a document subject to codification.

47 FR 30452
Published 7/14/82
Effective 10/12/82

Protection of Employees Who Provide Information

See Part 19 Statements of Consideration

≫48 FR 28194
Published 6/21/83
Effective 7/21/83

10 CFR Part 60

Disposal of High-Level Radioactive Wastes in Geologic Repositories Technical Criteria

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is publishing technical criteria for disposal of high-level radioactive wastes (HLW) in geologic repositories, as required by the Nuclear Waste Policy Act of 1982. The criteria address siting, design, and performance of a geologic repository, and the design and performance of the package which contains the waste within the geologic repository. Also included are criteria for monitoring and testing programs, performance confirmation, quality assurance, and personnel training and certification.

EFFECTIVE DATE: July 21, 1983.

FOR FURTHER INFORMATION CONTACT: Patricia A. Comella, Deputy Director of the Division of Health, Siting and Waste Management, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Telephone (301) 427–4616.

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Background

On February 25, 1981, the Nuclear Regulatory Commission published rules

which established procedures for the licensing of geologic disposal, by the U.S. Department of Energy (DOE), of high-level radioactive wastes (HLW). 46 FR 13971. On July 8, 1981, NRC proposed technical criteria which would be used in the evaluation of license applications under those procedural rules (46 FR 35280). NRC received 93 comment letters on these proposed technical criteria, 89 of which were received in time for the Commission to consider in preparing the final technical criteria that are published here. No significant new issues were raised in the four letters received too late for consideration. The principal comments, and the Commission's responses, are reviewed in the discussion below. A more detailed analysis of the comments is contained in a NRC staff report (NUREG–0804) which is being distributed to all commenters on the proposed rule and which may be purchased by other interested parties from the NRC's GPO Sales Program, Washington, D.C. 20555. Upon publication, a copy will be placed in the Public Document Room (PDR), 1717 H Street NW., Washington, D.C. 20555. This staff report includes a technical rationale for the performance objectives in 10 CFR Part 60 as well as the comment analysis. The final rules contain a number of changes, explained in this statement, that reflect concerns addressed in the public comments.

The licensing procedures referenced above provide for DOE to submit site characterization reports to NRC prior to characterizing sites that may be suitable for disposal of HLW. NRC would analyze these reports, taking into account public comments, and would make appropriate comments to DOE.

The licensing process will begin with the submission of a license application with respect to a site that has been characterized. Following a hearing, DOE may be issued a construction authorization. Prior to emplacement of HLW, DOE would be required to obtain a license from NRC; an opportunity for hearing is provided prior to issuance of such a license. Permanent closure of the geologic repository and termination of the license would also require licensing action for which there would be opportunity for hearing.

The purpose of the technical criteria is to define more clearly the bases upon which licensing determinations will be made and to provide guidance to DOE and information for the public with respect to the Commission's policies in this regard. The criteria also indicate the approach the Commission is taking with respect to implementation of an Environmental Protection Agency (EPA) standard, particularly with respect to the classification of processes and events as "anticipated" or "unanticipated" and the definition of the "accessible environment" from which radionuclides must be isolated.[1]

The Commission anticipates that licensing decisions will be complicated by the uncertainties that are associated with predicting the behavior of a geologic repository over the thousands of years during which HLW may present hazards to public health and safety. It has chosen to address this difficulty by requiring that a DOE proposal be based upon a multiple barrier approach. An engineered barrier system is required to compensate for uncertainies in predicting the performance of the geologic setting, especially during the period of high radioactivity. Similarly, because the performance of the engineered barrier system is also subject to considerable uncertainty, the geologic setting must be able to contribute significantly to isolation.

The multibarrier approach is implemented in these rules by a number of performance objectives and by more detailed siting and design criteria.[2] In addition to the objective of assuring that licensed facilities will adequately isolate HLW over the long term, these provisions also address considerations related to health and safety during the operational period to permanent closure of the geologic repository.

In this statement of considerations the Commission will first discuss six issues on which it had specifically requested public comment. It will then review other principal changes to the rule which have been adopted in the light of comments received. The discussion will then take up suggestions of a policy nature which the Commission has declined to adopt. Finally, a section-by-section analysis reviews all changes made other than those of a strictly editorial nature. As appropriate, reference is made to relevant provisions of the Nuclear Waste Policy Act of 1982, Pub. L. 97–425, approved January 7, 1983, and to the Environmental Protection Agency's proposed Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level, and Transuranic Radioactive Wastes, 47 FR 58195, December 29, 1982. The Commission regards the publication of these rules as constituting full compliance with Section 121(b)(1)(A) of the Nuclear Waste Policy Act, which requires promulgation of the Commission's technical criteria for geologic repositories not later than January 1, 1984.[3] The Commission will review these criteria after EPA's environmental standards are published in final form and will initiate subsequent rulemaking actions, as necessary, to take any such standards into account. The Commission further intends additional rulemaking to deal with any changes in licensing procedures that may be necessary in light of the Nuclear Waste Policy Act.

Issues Raised by the Commission

As noted above, the Commission specifically requested public comment on six issues, each of which will be reviewed here before turning to other considerations. These issues dealt with: (1) A single overall performance standard vs. minimum performance

[1] Reorganization Plan No. 3 of 1970 (35 FR 15623, October 6, 1970) authorizes EPA to establish generally applicable environmental standards for radioactivity. EPA's recently proposed standard would allow higher levels of radioactivity for "unanticipated processes and events" than would be permitted if "anticipated processes and events" were to occur. The proposed standard also relates these levels to places within the "accessible environment." The Commission has assumed that these concepts will be reflected in final standards that may be established by EPA.

[2] Under the Nuclear Waste Policy Act of 1982, the Commission's technical criteria "shall provide for the use of a system of multiple barriers in the design of the repository . . . as the Commission deems appropriate." Section 121(b)(1)(B). The criteria set forth in this rule represent the criteria which, for purposes of this provision, the Commission deems appropriate.

[3] The technical criteria are explicitly stated to be applicable to construction authorization, § 60.101(b), and to the issuance of licenses to receive and possess high-level radioactive waste at geologic repositories, § 60.101(a). An application to authorize premanent closure requires a license amendment, § 60.51(a); the relevant technical requirements and criteria are set out in the rules here being adopted, inasmuch as the Commission is to be "guided by the considerations that govern the issuance of the initial license, to the extent applicable," § 60.45(b). The Commission interprets the statutory provision pertaining to applications for "decommissioning" to refer to the procedure described in § 60.52, pertaining to termination of a license; such an application would also require a license amendment, and the Commission here, too, would be guided by the present rules to the extent applicable, together with the additional criteria already set out at § 60.52(c). Thus, at every stage of the licensing process, the central inquiry will be the adequacy of DOE's plans and activities as they relate to the isolation of wastes (as well as to safety during operations); and for each decision point we have provided, as is appropriate, for an evaluation that takes into account both the performance objectives and the more detailed criteria that the Commission here adopts. (If Section 212(b)(1)(A) applies to the decommission of surface facilities, the required criteria have been included in § 60.132(a). That paragraph provides that surface facilities must be designed to facilitate decontamination or dismantling to the same extent as would be required, under other NRC regulations, for equivalent activities. This topic may be treated again, in greater detail, in connection with the development of rules that would be generally applicable to decontamination and dismantlement of facilities at which activities subject to Commission regulatory authority are carried out.)

standards for each of the major elements of the geologic repository; (2) the need for, and appropriate duration of, a waste retrievability period; (3) the level of detail to be used in the criteria, particularly with respect to design and construction requirements; (4) the desirability of population-related siting criteria; (5) the application of an ALARA (as low as reasonably achievable) principle to the performance requirements dealing with containment and control of releases; and (6) alternative approaches on dealing with possibilities of human intrusion into the geologic repository.

Single vs. Multiple Performance Standards

The Commission identified two potentially viable approaches to assuring achievement of the desired isolation goal of controllng releases so as to assure that radioactivity in the general environment is kept to sufficiently low levels. The Commission suggested that a course that would be "reasonable and practical" would be to adopt a "defense-in-depth" approach that would prescribe minimum performance standards for each of the major elements of the geologic repository, in addition to prescribing the EPA standard as a single overall performance standard. However, as an alternative, the Commission invited comment on an approach that would specify the EPA standard as the sole measure of isolation performance.

There was general acceptance of the Commission's multiple barrier approach, with its identification of two major engineered barriers (waste packages and underground facility), in addition to the natural barrier provided by the geologic setting.

While the usefulness of multiple barriers was recognized, the establishment of fixed numerical values for performance was extensively criticized. The criticism took two forms. First, numerous commenters argued that until such times as an EPA standard is established, no logical connection can be demonstrated between the performance of the particular barriers and the overall system performance objective. The values specified by NRC, it was argued, had not been shown to be either necessary or sufficient to meet any particular standard. The second criticism was that the performance appropriate to a particular barrier is greatly dependent upon design features and site characteristics and that values such as those proposed by the Commission could unduly restrict the applicant's flexibility—possibly imposing great additional expense without compensating protection of public health and safety.

The Commission recognizes the force of both these arguments. Nevertheless, if the Commission were simply to adopt the EPA standard as the sole measure of performance, it would have failed to convey in any meaningful way the degree of confidence which it expects must be achieved in order for it to be able to make the required licensing decisions. More should be done. To that end, the Commission considers it appropriate to include reasonable generic requirements that, if satisfied, will ordinarily contribute to meeting the standards even though modifications may need to be made for some designs and locations.

The Commission's response, therefore, has been to apply, for illustrative purposes, an assumed EPA standard and to examine the values for particular barriers that would assist in arriving at the conclusion that the EPA standard has been satisfied. For this purpose, a draft EPA standard which was referred to in some of the comments has been used. A copy of this draft standard has been placed in the PDR and will be contained in NUREG–0804. Following publication of EPA's proposed standard in the **Federal Register**, on December 29, 1982, a supplemental evaluation was made to take into account certain departures from EPA's earlier draft. In this way, the Commission has been able to demonstrate the logical connection which it makes between the overall system performance objective for anticipated processes and events, as set out in EPA's proposed standard, and the performance of specific barriers. One of the considerations that affects its judgment in this regard is the need to take proper account of uncertainties in the performance of any of the barriers. As one commenter noted, "To provide a safety factor to compensate for this uncertainty, a multi-barrier system has many advantages. Since the Commission cannot answer the global problem and predict every possible combination of circumstances that might cause releases of waste, multiple, independent mechanisms of slowing or limiting the discharge of radioactive materials to the environment are desirable." There is nothing inconsistent between the multiple barrier, defense-in-depth approach and a unitary EPA standard; on the contrary, in view of the many possible circumstances that must be taken into account, the Commission firmly believes that the performance of the engineered and natural barriers must each make a definite contribution in order for the Commission to be able to conclude that the EPA standard will be met. The Commission's task is not only a mathematical one of modeling a system and fitting values for particular barriers into the model in order to arrive at a "bottom line" of overall system performance. The Commission is also concerned that its final judgments be made with a high degree of confidence. Where it is practical to do so, the Commission can and will expect barrier performance to be enhanced so as to provide greater confidence in its licensing judgments. Accordingly, a variance between actual and assumed EPA standards will not necessarily require a change of corresponding magnitude in the individual barrier performance requirements.

While use of an assumed EPA standard provides a basis for specifying anticipated performance requirements for individual barriers, it does not deal with the concern about undue restriction upon the applicant's flexibility. The Commission's response to this has not been to abandon the values altogether, but rather to allow them to be modified as the particular case warrants. Thus, to take one example, the Commission continues to be concerned that thermal disturbances of the area near the emplaced waste add significantly to the uncertainties in the calculation of the transport of radionuclides through the geologic environment. The proposed rule addressed this problem by providing that all radionuclides should be contained within the waste packages for a period of 1,000 years. The Commission continues to consider it important to limit the source term by specifying a containment period (as well as a release rate). But the uncertainties associated with the thermal pulse will be affected by a number of factors, such as the age and nature of the waste and the design of the underground facility. For some repositories, a period substantially shorter than 1,000 years may be sufficient to allow for some of the principal sources of uncertainty to be eliminated from the evaluation of repository performance. For cases analyzed by the Commission on the basis of specified assumptions, a range of 300 years to 1,000 years would be appropriate. (These values appear in § 60.113(a)(ii)(A)). Yet even a shorter designed containment period might be specified, pursuant to § 60.113(b), in the light of conditions that are materially different from those that had been assumed. For example, if the wastes had been processed to remove the principal heat-generating radionuclides (cesium–137 and strontium–90), the 300-years provisions would not be controlling.

Similarly, the Commission may approve or specify a radionuclide release rate or a pre-waste-emplacement groundwater travel time that differs from the normal values, provided that the EPA standard, as it relates to anticipated processes and events, is satisfied. Appropriate values will be determined in the course of the licensing process, in a manner sensitive to the particular case, using the principals set out in the performance objectives, without having to have recourse to the exemption provisions of the regulations.

The numerical criteria for the individual barriers included in the rule are appropriate, insofar as anticipated processes and events are concerned, in assisting the Commission to determine with reasonable assurance that the proposed EPA standard has been satisfied. It should be noted, however, that in order to meet the EPA standard as it applies to unanticipated processes and events, higher levels of individual barrier performance may be required. DOE would need to provide in its design for such performance as may be necessary to meet the EPA standard with respect to such unanticipated processes and events even though in all other respects the values specified by § 60.113(a) and § 60.113(b) would be sufficient.

Retrievability

The purpose of this requirement was to implement in a practical manner the licensing procedures which provided for temporal separation of the emplacement decision from the permanent closure decision. Since the period of emplacement would be lengthy and since the knowledge of expected repository performance could be substantially increased through a carefully planned program of testing, the Commission wished to base its decision to permanently close on such information. The only way it could envision this was to insist that ability to retrieve—retrievability—be incorporated into the design of the geologic repository.

The proposed rule would have requiried in effect that the repository design be such as to permit retrieval of waste packages for a period of up to 110 years (30 years for emplacement, 50 years to confirm performance, 30 years to retrieve). The Commission solicited comment, noting that it would not want to approve construction of a design that would unnecessarily foreclose options for future decisionmakers, but that it was concerned that retrievability requirements not unnecessarily complicate or dominate repository design.

While the benefits of retaining the option of retrieval were recognized, the length of the proposed requirement, in the opinion of several commenters, was excessive. In their view, the Commission had given inadequate consideration to the additional costs of design, construction, and operations implied in the original proposal; however, no new cost or design information was presented by the commenters.

The Commission adheres to its original position that retrievability is an important design consideration. However, in response to the concerns expressed, the Commission has decided to rephase the requirement in functional terms. The final rule thus specifies that the design shall keep open the option of waste retrieval throughout the period during which the wastes are being emplaced and, thereafter, until the completion of a performance confirmation program and Commission review of the information obtained from such a program. By that time, significant uncertainties will have been resolved, thereby providing greater assurance that the performance objective will be met. In particular, the performance confirmation program can provide indications whether engineered barriers are performing as predicted and whether the geologic and hydrologic response to excavation and waste emplacement is consistent with the models and tests used in the Commission's earlier evaluations. While the commission has provisionally specified that the design should allow retrieval to be undertaken at any time within 50 years after commencement of emplacement operations, this feature is explicitly subject to modification in the light of the planned emplacement schedule and confirmation program for the particular geologic repository.

Some commenters suggested that the technical criteria specify the conditions that would require retrieval operations to be initiated. Such provisions would not belong in Subpart E, which is concerned with siting and design. Nor are they needed elsewhere. In the Commission's view, it is clear that retrieval could be required at any time after emplacement and prior to permanent closure if the Commission no longer had reasonable assurance that the overall system performance objective would be met. This situation could exist for a variety of reasons and the Commission believes that it should retain the flexibility to take into account all relevant factors and that it would be imprudent to limit the Commission's discretion by specifying in advance the particular circumstances that would make it necessary to retrieve wastes. It should be noted that DOE may elect to maintain a retrievability capability for a longer period that the Commission has specified, so as to facilitate recovery of the economically valuable contents of the emplaced materials (especially spent fuel). So long as the other provisions of the rule are satisfied this would not be prohibited. This consideration, however, plays no role in the Commission's requirement pertaining to retrievability. The Commission's purpose is to protect public health and safety in the event the site or design proves unsuitable. The provision is not intended to facilitate recovery for resource value.[4]

The Commission has also included a specific provision clarifying its prior intention that the retrievability design features do not preclude decisions allowing earlier backfilling or permanent closure. A related clarifying change has been the incorporation of a definition of "retrieval." This definition indicates that the requirement of retrievability does not imply ready or easy access to emplaced wastes at all times prior to permanent closure. Rather, the Commission recognizes that any actual retrieval operation would be an unusual event and may be an involved and expensive operation. The idea is that it should not be made impossible or impractical to retrieve the wastes if such retrieval turns out to be necessary to protect the public health and safety. DOE may elect to backfill parts of the repository with the intent that the wastes emplaced there will never again be disturbed; this is acceptable so long as the waste retrieval option is preserved.

The Commission has thus retained the essential elements of the retrievability design feature, but has provided greater flexibility in its application. The

[4] Under the Nuclear Waste Policy Act of 1982, the Commission's technical criteria "shall include such restrictions on the retrievability of the solidified high-level radioactive waste and spent fuel in the repository as the Commission deems appropriate," Section 121(b)(1)(B). The criteria set forth in this rule represent the criteria which, for purposes of this provision, the Commission deems appropriate.

Section 122 of the Nuclear Waste Policy Act provides that, at the same time a repository is designed, DOE shall specify an appropriate period during which spent fuel could be retrieved for any reason pertaining to the public health and safety, or the environment, or for the purpose of permitting recovery of the economically valuable components of such spent fuel. The period of retrievability is subject to approval or disapproval by the Commission as part of the construction authorization process. Insofar as health and safety considerations are concerned, the Commission intends to grant such approval so long as its technical criteria are satisfied, and the Commission further intends to modify the licensing procedures to so specify.

Commission recognizes that retrievability implies additional costs—more, perhaps, for some media and designs than for others—yet it believes this is an acceptable and necessary price to pay if it enables the Commission to determine with reasonable assurance, prior to an irrevocable act of closure, that the EPA standard will be satisfied.

Level of Detail

The proposed rule contained general and detailed prescriptive requirements, derived from Commission experience and practice in licensing other facilities, with respect to the design and construction of a geologic repository. The Commission noted, however, that it was continuing to examine other possibilities for promulgating the more detailed of these requirements and it invited comments on the topic.

The public response included arguments addressed both to the level of detail generally and to specific criteria which were deemed to be unduly restrictive.

The Commission has concluded that there is merit in describing, in functional terms, the principal features which should be incorporated into geologic repository design—such as protection against dynamic effects of equipment failure, protection against fire and explosions, emergency capability, etc. Certain of these proposed criteria, however, such as those dealing with subsurface ventilation and shaft and borehole seals, were excessively detailed and, in some cases, inappropriate. At this stage of development, the Commission believes it should place emphasis upon the objectives that must be met and not become unduly concerned about the particular techniques that may be used in doing so. The changes that have been made are addressed in some detail in the section-by-section analysis of the rule.

Population-Related Siting Criteria

The proposed rule did not include any siting requirements which dealt directly with population density or proximity of population centers to a geologic repository operations area. The Commission indicated its belief that a more realistic approach, given the long period of time involved, would be to address the issue indirectly through consideration of resources in the geologic setting.

The numerous comments submitted in response to the Commission's specific question on this issue fell generally into two categories—those that endorsed the proposed approach and those that argued that population factors were important. The latter group addressed not only the geologic repository's long-term isolation capability, but also the relevance of population considerations in connection with the period when wastes are being received and emplaced.

The Commission is persuaded that population factors may need to be considered in connection with the period when wastes are being received and emplaced through evaluation of the adequacy of DOE's emergency plans. That section of the safety analysis report dealing with emergency planning (see § 60.21(c)(9)) will be reviewed on a case-by-case basis in the licensing process according to criteria that will be set forth in the future in Subpart I. (It should also be noted that under Section 112(a) of the Nuclear Waste Policy Act of 1982, DOE is required to develop guidelines that, among other things, will specify population factors that will disqualify a site from development as a repository. Issuance of those guidelines is subject to the concurrence of the Commission. The Commission has made no determination whether such guidelines, when issued, should in some manner be reflected in either the technical criteria or licensing procedures portions of 10 CFR Part 60).

Population distribution over the long term is immaterial if the geologic repository operates as anticipated. Demographic factors could nevertheless be of concern to the extent that they could increase the probability or the consequences of releases associated with unanticipated processes or events. As to probability, it is difficult to relate the likelihood of releases to population factors; it is the view of the Commission that it is more realistic, as originally stated, to reduce the probability by avoiding sites with significant resource potential and by using records and monuments to caution future generations. Consequences of unanticipated releases would be greater if they occur in densely populated areas. Nevertheless, it is the view of the Commission that it make little sense to attempt to limit such consequences by means of a population-related siting criterion, since long-range demographic forecasts are so inherently speculative and unreliable; instead, the Commission is taking the approach that releases that result from the occurrence of unanticipated processes and events must be evaluated and must satisfy the EPA standard.

While the Commission considers, based on the above, that the rule should not now contain explicit requirements, particularly numerical limits, on population density or distance from population centers, it notes that considerations related to future human activities, particularly uses of groundwater, are an important source of uncertainty in assessing future performance of a geologic repository. The Commission would consider it a favorable condition if these sources of uncertainty, which would be affected by a large nearby population, were not present at a particular site. Therefore, the Commission has included in the final rule, as a favorable condition, a low population density within the geologic setting and a controlled area that is remote from population centers.

The Commission anticipates that the selection of a densely populated area would be unlikely even in the absence of express constraints in NRC regulations. For one thing, such a site would be disqualified under the guidelines to be developed under the Nuclear Waste Policy Act. Additionally, DOE will need to acquire interests in land within the controlled area and may have to have additional powers beyond the boundaries of the controlled area. These requirements may be difficult to satisfy unless a remote location is selected for the geologic repository.

ALARA

The notice of proposed rulemaking requested comment on "whether an ALARA (as low as reasonably achievable) principle should be applied to the preformance requirements dealing with containment and control of releases." Some commenters believed that ALARA should be applied to all licensed activities, and that no exception should be made for geologic repositories. Other commenters argued against incorporating ALARA, since the allowable releases under the EPA standard would already be so low as to eliminate any significant risk to public health and safety.

Based in part upon the standard recently proposed by EPA, the Commission considers it reasonable to anticipate that the permissible amounts of radioactivity in the general environment will be established at a very low level. In fact, the statement of considerations accompanying EPA's proposed rule explains that EPA has chosen to propose disposal standards that limit the risks to future generations to a level no greater than the risks which those generations would be exposed to from equivalent amounts of unmined uranium ore and thus, any risks to future generations from disposal of high-level wastes would be no greater than, and probably much less than, risks which those generations would face if the

wastes had not been created in the first place. Efforts to reduce releases further would have little, if any, demonstrable value commensurate with their costs.

The EPA limits require the performance of geologic repositories to be effective over a long period of time. There will always be substantial uncertainties in predicting the long-term performance of geologic repositories. The Commission will insist upon the adoption of a variety of design features, tests, or other measures in order to be able to conclude with confidence that the EPA standard is met. The result may be the same as if the Commission were to impose similar requirements in the name of keeping releases as low as reasonably achievable. Given the substantial uncertainties involved with predicting long-term performance, the already low EPA limits and the already stringent geologic performance requirements, it is doubtful that the ALARA concept could be applied in a meaningful way.

When the Commission finds that certain measures are needed to improve confidence in dealing with uncertainties, it is making a substantial safety judgment. The same kinds of balancing that are undertaken in ALARA determinations may be appropriate. That is, if confidence in the performance of the geologic repository is sensitive to a particular source of uncertainty, it will be in order for the Commission to take into account both the significance of the factor involved and the costs of reducing or eliminating it.

In short, the Commission has conclued that the long-term performance requirements should not explicitly be tied to an ALARA principle, and the rule remains as it was when proposed. The Commission believes the concerns of the commenters in support of the ALARA approach will be largely accommodated in connection with its treatment of uncertainties in the course of the licensing process.

EPA's proposed rule (Part 191) indicates that appropriate measures must be taken, in light of the uncertainties involved in predicting repository performance, to assure that the "containment requirements" will be met. One of the measures identified by EPA would be the selection and design of disposal systems to keep releases to the accessible environment as small as reasonably achievable, taking into account technical, social, and economic considerations. The Commission is recommending to EPA that the assurance requirements, including the ALARA provision, be omitted from the final rule. The Commission emphasizes that its rules accommodate the underlying concerns of EPA, as articulated in its statement of considerations, that measures must be taken to assure confidence that the numerical release limits will be met.

Human Intrusion

The Commission observed, in the preamble of the proposed rule, that everything that is reasonable should be done to discourage people from intruding into the geologic repository. Those measures which its believed to be reasonable included directing site selection toward sites having little resource value and marking and documentation of the site. Beyond that, the Commission felt there would be no value in speculating on the "virtual infinity of human intrusion scenarios and whether they will or will not result in violation of the EPA standard." The Commission explained that inadvertent intrusion was highly improbable, at least for the first several hundred years during which time the wastes are most hazardous; and even if it should occur, it is logical to assume that the intruding society would have capability to assess the situation and mitigate consequences. The Commission recognized that deliberate intrusion to recover the resource potential of the wastes could result in elevated releases of radioactivity, but concluded that the acceptability of such releases was properly left to those making the decision to undertake resource recovery operations. It noted that comment on its proposal and alternative approaches would be welcome.

Commenters generally accepted the approach outlined. A number of commenters did emphasize the importance of intrusion scenarios as having the potential to lead to releases of radionuclides to the environment, but they suggested no alternative means for dealing with the prospect. One commenter correctly calls attention to the possibility of a third category of intrusion—that which is "intentional yet indifferent"—which was not covered in he earlier discussion of "inadvertent" or "deliberate" intrusion. This behavior presupposes knowlege (albeit imperfect) of the existence and nature of the geologic repository and a level of technology that could be applied to remedial action as well as to the intrusion itself, yet makes no judgment as to whether a societal decision has been made concerning the intrusion. The Commission has addressed this and other concerns in the revised language that is being adopted, as explained below.

Although the discussion accompanying the proposed rule indicated that intrusion scenarios need not be considered, the rule itself was not explicit on this point. The Commission considers it necessary to clarify its position and, in doing so, allows for examination of intrusion under appropriate bounding conditions. After careful consideration of the public comments received on questions relating to human intrusion, the Commission is of the view that while the passive control measures it is requiring will reduce significantly the likelihood of inadvertent intrusion into a geologic repository, occasional penetration of the geologic repository over the period of isolation cannot be ruled out, and some provision should be made in the final rule for consideration of intrusion should these measures fail. Its objective is to provide a means for evaluating events that are reasonably of concern, while at the same time excluding speculative scenarios that are inherently implausible. The Commission will not require this generation to design for fanciful events which the Commission has an abiding conviction will never occur; on the contrary, it will grant a license if it is satisfied that the risk to the health and safety of future generations is not unreasonable.

The rule now incorporates a definition of "unanticipated processes and events" which are reviewable in a licensing proceeding; such processes and events expressly include intrusion scenarios that have a sufficiently high likelihood and potentially adverse consequence to exceed the threshold for review. The scenarios must be "sufficiently credible to warrant consideration." The Commission is requiring that certain assumptions be made in assessing this likelihood. First, the monuments required by the rule are assumed to be sufficiently permanent to serve their intended purpose. The Commission takes this position because of its confidence that monuments can be built to survive. While it assumes that the monuments will last, it does not automatically assume that their significance will continue to be understood. Second, the Commission requires an assumption that the value to future generations of potential resources can be assessed adequately at this time. Consistent with its previously stated views, it thinks that the selection of a site with no foreseeably valuable resources could so reduce the likelihood of intrusion as to reduce, or eliminate, any further need for it to be considered. Third, the Commission requires the assumption that some functioning institutions—though not necessarily those undertaking the intrusion—

understand the nature of radioactivity and appreciate its hazards. The extent of intergenerational transfer of knowledge is, of course, debatable; it is conservative, in the light of human history to date, to predict this minimal level of information and to take it into account in assessing the likelihood that intrusion will occur. Fourth, the Commission provides that relevant records are preserved, and remain accessible, for several hundred years after permanent closure. While perhaps this period could not be justified on the basis of historic precedents alone, the Commission considers the required deposit in land records and archives, together with current data handling technology, to provide a sufficient basis for assuming that information about the geologic repository will continue to be available for several hundred years.

The definition of "unanticipated processes and events" also implicitly bounds the consequences of intrusion scenarios. This is accomplished not only by the assumption of continued understanding of radioactivity and survival of records, but also by the further assumptions that if there are institutions that can cause intrusion at depth in the first place, there will also be institutions able to assess the risk and take remedial action. It need not be assumed that today's technology would be used—merely that a level of social organization and technological competence equivalent to that applied in initiating the processes or events concerned would be available to deal with the situation.

It was suggested that another way to reduce the likelihood of human intrusion would be to adopt additional design criteria for the waste form or waste package. These would prohibit, or at least discourage, the emplacement of materials which themselves might attract recovery operations—for example, operations to recover the residual energy resource value in spent fuel or scarce and expensive materials in the waste package. But, under the definition of "unanticipated processes and events" in the final rule, intrusion for such proposes would have to be reviewed in the licensing process if the particular circumstances are sufficiently credible to warrant consideration. This imposes a reasonable constraint. The Commission believes that any further limitation would unduly interfere with the flexibility of DOE as a designer and could, in the case of spent fuel disposal, conflict with other national objectives.

In summary, the Commission has retained the principle that highly speculative intrusion scenarios should not be allowed to become the driving force in license reviews, but has introduced some flexibility to permit consideration of intrusion on a case-by-case basis where circumstances warrant.

Other Principal Changes in the Final Rule Anticipated/Unanticipated Processes and Events

The proposed rule defined anticipated processes and events as "those natural processes and events that are reasonably likely to occur during the period the intended performance objective must be achieved and from which the design bases for the engineered system are derived" At the same time, the Commission was requiring that the facility be designed so as to assure that long-term releases conform to standards established by EPA. The statement of considerations pointed out that if the process or event is unlikely, the overall system must still limit the release consistent with the EPA standard as applied to such events. This created a contradition because on the one hand it was stated that the design bases should be derived from anticipated processes and events while, on the other hand, the design was to meet an EPA standard as applied to what was unanticipated.

The Commission has resolved this conflict by eliminating the reference to design bases from the definition of "anticipated processes and events." It has also included a definition of "unanticipated processes and events." In the final rule, numerical performance objectives are established for particular barriers, assuming "anticipated processes and events." Such numerical criteria are not established for "unanticipated processes and events." Rather, additional requirements may be found to be necessary to satisfy the overall system performance objective as it relates to unanticipated processes and events.

It should be noted that the distinction between anticipated and unanticipated processes and events relates solely to natural processes and events affecting the geologic setting. The Commission intends that a judgment whether a natural process or event is anticipated or unanticipated be based upon a careful review of the geologic record. Such processes or events would not be anticipated unless they were reasonably likely, assuming that processes operating in the geologic setting during the Quaternary Period were to continue to operate but with the perturbations caused by the presence of emplaced waste superimposed thereon. Unanticipated processes and events would include those that are judged not to be reasonably likely to occur during the period the intended performance objective must be achieved, but which nevertheless are sufficiently credible to warrant consideration. These include processes and events which are not evidenced during the Quaternary period or which, though evidenced during the Quaternary, are not likely to occur during the relevant time frame. Identification of anticipated and unanticipated processes and events for a particular site will require considerable judgment and will not be amenable to accurate quantification, by statistical analysis, of their probability of occurrence.[5]

Because the design basis for the engineered barrier system will be derived from the identification of anticipated and unanticipated processes and events, such identification will have a pervasive effect on the basic structure of the licensing proceedings. The Commission therefore contemplates directing that rulings made in the course of construction authorization hearings on the scope of anticipated and unanticipated processes and events be separately identified by the presiding officers and certified to the Commission for interlocutory review, pursuant to 10 CFR 2.718(i).

The license review will thus need to include a determination whether the proposed activities will meet the EPA standard as applied to anticipated processes and events and as applied to such unanticipated processes and events, if any, as have been found to warrant consideration. Each determination will be made in the light of assessments which will involve interpretation of the geologic record and consideration of credible humaninduced events as bounded by the assumptions set forth above. Worst-case scenarios would be analyzed to the extent they may be encompassed by the definition of unanticipated processes and events. Complex quantitative models will need to be employed, and a wide range of factors considered in arriving at a determination of whether there is reasonable assurance, making allowance for the time period and

[5] The Commission views the proposed EPA standard as being directed to the evaluation of releases arising out of the categories that we have defined as "anticipated processes and events" and "unanticipated processes and events." As EPA itself recognizes, there can only be estimates rather than rigorous demonstrations of probabilities of occurrence. The Commission's translation of the EPA language into qualitative terms provides a clearer basis for judging, under the Atomic Energy Act, whether there is unreasonable risk to the health and safety of the public.

hazards involved, that the EPA standard will be met. There are two principal elements that will go into the Commission's application of this "reasonable assurance" concept. First, the performance assessment which has been performed must indicate that the likelihood of exceeding the EPA standard is low. Second, the Commission must be satisfied that the performance assessment is sufficiently conservative, and its limitations are sufficiently well understood, that the actual performance of the geologic repository will be within predicted limits.

Transuranic Waste (TRU)

The proposed rule included a definition of transuranic waste and performance objectives that would apply to the disposal of TRU in a licensed geologic repository. This was widely misconstrued as a requirement that radioactive material conforming to the definition must be disposed of in this manner. This was not the intention, nor in fact did the rule so specify. Rather, the Commission was merely indicating what performance objectives would apply *if* TRU were disposed of in a licensed geologic repository. Some commenters also took exception to the definition of TRU in the rule.

Whether or not a geologic repository is subject to licensing depends upon the applicability of Sections 202(3) and 202(4) of the Energy Reorganization Act of 1974. (See definition of "HLW facility.") If a facility is licensed, then the Commission must consider the radiological hazards associated with whatever wastes may be emplaced. The Commission attempted, in the proposed rule, to address the requirements for one such kind of waste—TRU. But the Commission was too restrictive, in that its definition of TRU was too limited for present purposes and in that wastes other than HLW and TRU were not covered at all. For the time being, the Commission has concluded that the matter is best handled by eliminating all references to TRU. The remaining performance objectives provide adequate guidance to deal with TRU-related issues that may arise.

The Commission has also reviewed the waste package requirements, which as originally written would have applied to all emplaced radioactive waste. It is appropriate to include such requirements for HLW, which must necessarily be disposed of in a licensed facility. Since the Commission does not know what other radioactive wastes, if any, will also be emplaced, and what their chemical, radiological, thermal, and other characteristics may be, it has decided to leave pertinent waste package requirements to be determined on a case-by-case basis as the need arises.

Siting Criteria

Although provisions relating to site characteristics have been revised, the Commission has retained the same two basic concepts. First, a site should exhibit an appropriate combination of favorable conditions, so as to encourage the selection of a site that is among the best that reasonably can be found. By referring to a "combination" of conditions, it implies that the analysis must reflect the interactive nature of geologic systems. Second, any potentially adverse conditions should be assessed in order to assure that they will not compromise the ability of the geologic repository to meet the performance objectives. It is important to recognize that a site is not disqualified as a result of the absence of a favorable condition or the presence of a potentially adverse condition. The Commission emphasizes this point here because several commenters who characterized the siting criteria as unduly restrictive failed to appreciate that the presence of potentially adverse conditions would not exclude a site from further consideration while others mistakenly assumed that favorable conditions were requirements.

The changes do not reflect any departure from the Commission's original philosophy, but they are designed to express its purpose more clearly. Thus, its interest in specifying that the geologic setting shall have exhibited "stability" since the start of the Quarternary Period was to assure only that the processes be such as to enable the recent history to be interpreted and to permit near-term geologic changes to be projected over the relevant time period with relatively high confidence. This concept is best applied by identifying, as potentially adverse conditions, those factors which stand in the way of such interpretation and projection; this is the approach the Commission has chosen to follow.

One revision is the elimination of the classification of potentially adverse conditions into one set pertaining to the "geologic setting" (corresponding to "site" in the final rule) and one set pertaining to the "disturbed zone." The Commission has determined that by defining these conditions as potentially adverse only when they occur in the site or disturbed zone, respectively, some significant factors bearing upon waste isolation may not be assessed. The Commission has changed the siting criteria, therefore, so that the presence of any of the enumerated conditions is to be regarded as potentially adverse if it applies to the controlled area and, in addition, such a condition outside the controlled area is to be regarded as potentially adverse if it may affect isolation within the controlled area.

Another change, discussed under *Single vs. Multiple Performance Standards*, may have the effect of increasing the importance of the geological conditions. Under the final rule, the performance objectives for the engineered barrier system (§ 60.113(a)(1)) may be adjusted, on a case-by-case basis, if the overall system performance objective, as it relates to anticipated processes and events, is satisfied. This feature of the final rule may provide the designer additional incentive to select the site so as to maximize its isolation capabilities.

The Commission's review of the siting criteria, as modified, has led it to conclude that the isolation capabilities of the geologic repository will be given the emphasis that they merit. This review has included a consideration of suggestions that the rule require that the slate of sites be among the best that can be found on the basis of geological factors alone and that the geologic characteristics of the site provide the highest reasonably available degree of the site's isolation capabilities. These topics are discussed below, under the heading *Geologic Conditions*.

A detailed review of the siting criteria is contained in the Section-by-Section Analysis.

Containment

Several commenters took exception to the performance objective calling for a design of the waste packages to "contain all radionuclides" for a specified period after permanent closure. The objections were: first, that 100% performance cannot be expected in view of the very large number of containers that may be emplaced; second, that 100% performance cannot be justified as being needed in order to meet any likely EPA standard; and, third, that the adequacy of design to contain "all" radionuclides for long

• Under Section 112(a) of the Nuclear Waste Policy Act of 1982, DOE is required to develop guidelines for the recommendation of sites for repositories. Among other things, such guidelines are to "specify detailed geologic considerations that shall be primary criteria for the selection of sites in various geologic media." Issuance of these guidelines is subject to the concurrence of the Commission. The Commission has made no determination whether such guidelines, when issued, should in some manner be reflected in either the technical criteria or licensing procedures portions of 10 CFR Part 60.

periods of time is not demonstrable. The commenters failed, in part, to recognize that under the specified standard of proof (see *Reasonable Assurance*, below), the applicant would not be forced to carry an impossible burden. Nevertheless, since the Commission does not expect proof that literally all radionuclides will be contained, the performance objective now requires design so that containment of HLW within the high-level waste packages will be "substantially complete" for the specified period.

Terminology

Several commenters criticized, as vague or confusing, the terms used by the Commission to describe the various geographical locations that are addressed by the rule. There are many such locations—and there must be—because the Commission must deal with different concerns during site characterization, during operations, and after permanent closure. The Commission has nevertheless attempted to clarify the terms. In addition to the significant changes reviewed here, see also the discussion in the Section-by-Section Analysis.

Accessible Environment/Controlled Area. The isolation capability of a geologic repository is evaluated at a boundary which the Commission has referred to as the "accessible environment." Under the proposed rule, this was defined as "portions of the environment directly in contact with or readily available for use by human beings." Several commenters criticized this definition as being excessively vague; further, the definition failed to assure that the isolation capability of the rock surrounding the underground facility would be given appropriate weight in licensing reviews.

The Commission agrees with the criticism and has revised the definition in several respects—most importantly by excluding from the accessible environment that portion of the lithosphere that is inside what the Commission is calling, in the final rule, a "controlled area." This is an area marked with monuments designed to caution future generations against subsurface penetrations. The size and shape of the controlled area will depend upon the characteristics of the particular geologic repository, but it must be small enough to justify confidence that the monuments will effectively discourage subsurface disturbances. The Commission has therefore limited the size of the controlled area so that it extends no more than 10 kilometers from the emplaced waste. The term "accessible environment" also appears in the proposed EPA standard. The Commission has used the EPA language as a starting point—for example, in specifying the surface locations that are part of the accessible environment. But there is an important difference between the two definitions, in that EPA includes in the accessible environment only those parts of the lithosphere that are more than 10 kilometers from the emplaced waste, whereas NRC may include parts of the lithosphere that are less than 10 kilometers from the emplaced waste, depending on the extent of the "controlled area" for a geologic repository. In other words, the accessible environment may be larger under 10 CFR Part 60 than might be the case under the proposed EPA Standard. The two definitions are nevertheless consistent in the sense that if the isolation requirements are satisfied at the boundary of the accessible environment specified by 10 CFR Part 60, they will necessarily be satisfied at the boundary defined by EPA as well.

Both technical and legal considerations have influenced the Commission's decision not to adopt an unqualified 10-kilometer standard. The technical consideration is that uncertainties about activities that may be undertaken in the area outside the controlled area are so great that the Commission would not be warranted in giving credit to the isolation capability of the undisturbed lithosphere there. The legal consideration is that the standards established by EPA are to apply outside the boundaries of locations controlled by NRC licensees, and in the context of 10 CFR Part 60 this refers most appropriately to the "controlled area" as defined by the regulation. The Commission believes that the final rule is fully responsive to the concerns of the commenters while conforming as well to the policies underlying EPA's proposed standard.

Geologic Setting. The proposed rule limited this term to systems that provide isolation of the waste. This is too restrictive a definition to cover the wider region of interest which the Commission seeks to encompass by "geologic setting." The definition has accordingly been extended to include the geologic, hydrologic, and geochemical systems of the region in which a geologic repository operations area is or may be located.

Site. "Site" had been defined in the proposed rule as being equivalent to "geologic setting." This was appropriate where geologic setting referred to an area having isolation capability. In the final rule, isolation is to be provided within a controlled area rather than within the geologic setting and accordingly "site" now refers to the location of this controlled area.

Decommissioning. As used in the proposed technical criteria, the term "decommissioning" was intended to apply to that stage at which the underground facility was closed and shafts and boreholes were sealed. It was these activities that were addressed in § 60.51, "License amendment to decommission." This intention is better expressed by employing the term "permanent closure." Several commenters on the proposed rule expressed the opinion that including the requirement for dismantlement of all surface facilities in the definition of the term "decommissioning" may be unnecessary and overly restrictive. Upon consideration of these comments the Commission believes that where there is a need to refer to decontamination or dismantlement of surface facilities, this can readily be done without referring to "decommissioning."

Accordingly, references to "decommissioning" with one exception (see § 60.132(e)), have been deleted from the rule, and the language now refers to "permanent closure" or to "decontamination or dismantlement of surface facilities," as appropriate.

Important to Safety. In response to public comments on Part 60, the NRC has adopted a numerical criterion for determining which structures, systems and components are important to safety. Structures, systems, and components are important to safety if, in the event they fail to perform their intended function, an accident could result which causes a dose commitment greater than 0.5 rem to the whole body or any organ of an individual in an unrestricted area.[1] The value of 0.5 rem is equal to the annual dose to the whole body of an individual in an unrestricted area that would be permitted under 10 CFR Part 20 for normal operations, the same as permitted for normal operations of certain other activities licensed by NCR. Such systems, structures, and components would be subject to additional design requirements and to a quality assurance program to ensure that they performed their intended functions. The choice of 0.5 rem in this instance should not be construed as implying that it would be appropriate if applied to any other types of activities subject to regulation by the Commission.

[1] 10 CFR Part 50, Appendix A, uses the term "important to safety" in a different context for nuclear power plants. The 10 CFR Part 60 definition does not supersede the 10 CFR Part 50 definition in nuclear power application.

(The permissible annual dose in unrestricted areas—now 0.5 rem–is currently under review. The Commission contemplates that if this dose limit were to be revised, a corresponding change would be considered here.)

In the final rule, the term "important to safety" applies solely to the functioning of structures, systems, and components during the period of operations prior to repository closure. The proposed rule had also applied this term to structures, systems, and components which must function in a particular way in order to meet the long-term isolation objective after repository closure. In the final rule, this latter group, which is intended to meet the design criteria that address long-term performance, is characterized as "important to waste isolation." Quality assurance requirements apply to structures, systems, and components equally whether they be "important to safety" or "important to waste isolation."

Discussion of Other Comments

These issues raised by commenters merit discussion here even though they have resulted in no change to the rule.

Comparative Safety Analyses

Several commenters took exception to the proposed requirement that the safety analysis report include a comparative evaluation of alternatives to the major design features that are important to radionuclide containment and isolation, [now termed "important to waste isolation"], on the ground that a safety analysis should be directed at the specific design being proposed. As a general principle, the commenters are correct. In the context of licensing activities at a geologic repository operations area, however, the Commission thinks it is well within its discretion to seek the requested information. If the Commission finds, on the basis of its review, that the adoption of some alternative design feature would significantly increase its confidence that the performance objectives would be satisfied, and that the costs of such an approach are commensurate with the benefits, it should not hesitate to insist that the alternative be so adopted. This is consistent with the views expressed above in the discussion of the ALARA principle and, also, with the provisions of the revised performance objectives which contemplate that the performance objectives for particular barriers are subject to modification, on a case-by-case basis, as needed to satisfy applicable EPA standards.

Unsaturated Zone

The Commission had explained that the proposed criteria were developed for disposal in saturated media, and that additional or alternative criteria might need to be developed for regulating disposal in the unsaturated zone. Accordingly, the performance objective for the engineered barrier system (proposed § 60.111(b)(2)(i)) was written so as to require the assumption of full or partial saturation of the underground facility and the favorable and potentially adverse conditions concerned only siting in the saturated zone.

This approach was criticized on the basis that disposal in the unsaturated zone was a viable alternative, and that since the criteria were generally applicable without regard to the possibility of saturations, their scope and applicability should not be unduly restricted. The Commission has reviewed the criteria in the light of the comments and finds this criticism to be well-founded. Although the criteria as written are generally appropriate to disposal in both the saturated zone and the unsaturated zone, some distinctions do need to be made. Rather than promulgating the criteria which will apply to the unsaturated zone at this time, the Commission will shortly issue such criteria in proposed form so as to afford a further opportunity for public comment. However, those criteria that are uniquely applicable to the saturated zone are so indicated.

Geologic Conditions

One commenter recommended that the rule should require that the slate of sites characterized by DOE be among the best that can reasonably be found on the basis of geological factors alone. The Commission did indicate, when it adopted licensing procedures, that the site characterization requirements will assure that DOE's preferred site will be chosen from a slate of sites that are among the best that reasonably could be found. The standard proposed by the commenter is quite different. The Commission intended that DOE should be able to take into account a variety of non-geological considerations in its screening process. It could properly exclude such locations as: (1) Areas, such as national parks and wilderness, devoted to other paramount uses, (2) locations which would be subject to unusually severe environmental and socioeconomic impacts, and (3) locations where necessary surface, mineral, and water rights may be obtainable only at great expense and with severe dislocating effects on residents. The Commission considers the rule, as written, properly conveys its meaning on this score.

The same commenter urged it to require a demonstration that the geologic characteristics of the chosen site proved the highest reasonably achievable degree of enhancement of the waste isolation capabilities of the geologic repository. Again, the Commission declines to accept the suggestion. In the first place, it anticipates that DOE would on its own initiative strive to maximize isolation capabilities in order to demonstrate more conclusively the facility's compliance with the performance objectives and other technical criteria. Beyond this, however, the Commission believes the proposal could have undesirable and unintended consequences. Maximizing isolation capabilities could dictate development at one particular location instead of at another a few miles away; this could result in the same kind of adverse environmental or other effects as were described above. Furthermore, adherence to the proposed standard could unduly interfere with, or increase the cost of, achievement of other goals, such as maintenance of retrievability, providing for worker safety, etc.

There were other related comments which argue that the Commission's approach places too great an emphasis on engineered barriers and provides insufficient incentive to select a site with optimal geologic and hydrologic characteristics. The Commission considers both engineered and natural barriers to be important, and it has structured the technical criteria in a manner that demands not only the use of advanced engineering methods, but also selection of a site with a excellent isolation capabilities. As explained in the discussion of *Reasonable Assurance*, below, uncertainies in the models used in the analysis of repository performance must be considered in the Commission's deliberations on the issuance of a construction authorization or license. Selection of a site with favorable geologic conditions will greatly enhance the Commission's ability to make the prescribed findings. Moreover, since the final rule provides flexibility for the Commission to approve or specify performance objectives for the engineered barriers on a case-by-case basis, the applicant is afforded still a further incentive to pick a site in which the host rock has favorable geochemical characteristics or in which other particular sources of uncertainty about hydrogeologic conditions are

substantially reduced. But in any event, the Commission anticipates that a high standard of engineering will be necessary—not only to compensate for geologic uncertainties at even the best reasonably available sites, but perhaps also to mitigate the consequences of unanticipated processes and events (including potential intrusion) during the years when fission product inventories remain high.

Although the Commission agrees with the underlying appraisal of the commenters that the isolation capabilities of the site play a key role in assuring that the performance objectives will be met, it finds no reason to change the rule's approach.

Reasonable Assurance

The proposed rule stated that with respect to the long-term objectives and criteria under consideration, "what is required is reasonable assurance, making allowance for the time period and hazards involved, that the outcome will be in conformance with those objectives and criteria." A number of commenters took exception to this formulation on the ground that it provides inadequate guidance as to the required level of proof. Others were concerned that "reasonable assurance" was too weak a test and that the Commission should not license DOE activities without a "high degree of confidence" that releases would be very small. Some commenters suggested that a statistical definition of acceptability should be employed. For the reasons set forth below, the Commission has not modified the language.

In the Commission's view, the "reasonable assurance" standard neither implies a lack of conservatism nor creates a standard which is impossible to meet. On the contrary, it parallels language which the Commission has applied in other contexts, such as the licensing of nuclear reactors, for many years. See 10 CFR 50.35(a) and 50.40(a). The reasonable assurance standard is derived from the finding the Commission is required to make under the Atomic Energy Act that the licensed activity provide "adequate protection" to the health and safety of the public; the standard has been approved by the Supreme Court. *Power Reactor Development Co.* v. *Electrical Union*, 367 U.S. 396, 407 (1961). This standard, in addition to being commonly used and accepted in the Commission's licensing activities, allows the flexibility necessary for the Commission to make judgmental distinctions with respect to quantitative data which may have large uncertainties (in the mathematical sense) associated with it.

The Commission has not modified the language, but has explained elsewhere (see *Anticipated/Unanticipated Processes and Events*, above) how the concept will be applied. The Commission expects that the information considered in a licensing proceeding will include probability distribution function for the consequences from anticipated and unanticipated processes and events. Even if the calculated probability of meeting the Commission's standards is very high that would not be sufficient for the Commission to have "reasonable assurance"; the Commission would still have to assess uncertainties associated with the models and data that had been considered. This involves qualitative as well as quantitative assessments. The Commission would not issue a license unless it were to conclude, after such assessments, that there is reasonable assurance that the outcome will in fact conform to the relevant standards and criteria.

It is important to keep in mind this distinction between, first, a standard of performance and, second, the quality of the evidence that is available to support a finding that the standard of performance has been met. In principle, there is no reason why the first of these—the performance standard—cannot be expressed in quantitative terms. The rule does this in several places—notably, in including as performance objectives a designed containment period, a radionuclide release rate, and a pre-waste-emplacement groundwater travel time. Similarly, EPA's standard will establish limits on concentrations or quantities of radioactive material in the general environment.

Expressing a requisite level of confidence in quantitative terms is far more problematical. To be sure, measurement uncertainties are amenable to statistical analyses. Even though there may be practical limitations on the accuracy and precision of measurements of relevant properties, it is possible to make some quantitative statement as to how well these values are known. The licensing decisions which the Commission will be called upon to make involve additional uncertainties—those pertaining to the correctness of the models being used to describe the physical systems—which are not quantifiable by statistical methods. Conclusions as to the performance of the geologic repository and particular barriers over long periods of time must largely be based upon inference; there will be no opportunity to carry out test programs that simulate the full range of relevant conditions over the periods for which waste isolation must be maintained.

The validity of the necessary inferences cannot be reduced, by statistical methods, to quantitative expressions of the level of confidence in predictions of long-term repository performance. Similarly, the Commission will not be able to rigorously determine the probability of occurrence of an outcome that fails to satisfy the performance standards. It must use some other language, such as "reasonable assurance," to characterize the required confidence that the performance objectives will be met. In practice, this means that modeling uncertainties will be reduced by projecting behavior from well understood but simpler systems which conservatively approximate the systems in question. Available data must be evaluated in the light of accepted physical principles; but, having done so, the Commission must make a judgment whether it has reasonable assurance that the actual performance will conform to the standards the Commission has specified in this rule.

It should also be borne in mind that the fact-finding process is an administrative task for which the terminology of law, not science, is appropriate. The degree of certainty implied by statistical definition has never characterized the administrative process. It is particularly inappropriate where evidence is "difficult to come by, uncertain or conflicting because it is on the frontiers of scientific knowledge." *Ethyl Corp.* v. *EPA*, 541 F.2d 1, 28 (D.C. Cir. 1976).

Population vs. Individual Dose

Some commenters noted that the performance objectives are derived from an assumed EPA standard that is based upon consideration of doses to populations as a whole rather than to the maximally exposed individual. Several other analyses of repository design have examined prospective requirements in terms of keeping individual doses below specified values, and as a consequence have led to different conclusions. The differences represent a source of potential uncertainty regarding the overall goal for safety performance. However, the resolution of this question is a matter within the province of EPA. The Commission has assumed that the EPA approach will be based upon population dose, since that is the direction reflected in its working documents and its

recently proposed standard. The Commission's rule, especially as modified to allow performance objectives for particular barriers to be adapted in the light of the EPA standard, can be applied whether the overall safety goal is expressed in terms of total releases to the environment or in terms of maximum dose to an individual or maximum concentration at any place or time.

If EPA were to establish a standard based upon individual doses, the Commission would review the provisions dealing with the content of the license application (§ 60.21) so as to develop requirements for any additional analyses that might be needed to evaluate site-specific pathways for released radionuclides to reach humans.

Long-Term Post-Closure Monitoring

Several of the commenters suggested that the performance confirmation program be required to be continued for as long as one thousand years after permanent closure of the underground facility. The Commission considers such measures unnecessary and unlikely to provide useful information on the performance of a geologic repository. The multiple barrier approach the Commission has adopted will result in containment of substantially all of the radioactive materials within the waste packages for centuries after permanent closure, the feasibility of obtaining reliable data on subsurface conditions over a period of centuries is questionable, and the practicality of taking remedial action after sealing of the shafts is doubtful. Moreover, the emplacement of remote subsurface monitoring instruments and the provision of data transmission capabilities, could provide additional pathways for release that would make it more difficult to achieve isolation. Rather, the Commission has adopted an approach where the retrievability option is maintained until a performance confirmation program can be completed that will allow the Commission to decide, with reasonable assurance, that permanent closure of the facility, with no further active human intervention with the emplaced wastes, will not cause an unreasonable risk to public health and safety. See also, *Retrievability*, above.

Section-by-Section Analysis

The final rule included numerous changes that reflect the considerations discussed above. Other changes, not involving significant policy issues, have also been incorporated in the final rule. The following section-by-section analysis identifies the changes from the proposed rule and includes an appropriate explanation for the revisions not previously discussed. Principal references are to the text of the final rule. Where the counterpart provision of the proposed (or procedural) rule appeared in a different place, that citation is given in brackets.

Section 60.2 Definitions.

"Accessible environment." See *Accessible Environment/Controlled Area*, above.

"Anticipated processes and events." See *Anticipated/Unanticipated Processes and Events*, above.

"Candidate area." This term is unchanged, but will be considered again in connection with the Commission's review of the licensing procedures in the light of the Nuclear Waste Policy Act.

"Controlled area." New. See *Accessible Environment/Controlled Area*, above.

"Decommissioning." Deleted. See *Decommissioning*, above.

"Disposal." The undefined term "biosphere" has been changed to "accessible environment." As used in these rules, "isolation" refers specifically to radioactive materials entering the accessible environment. The definition here is related to the concept of isolation rather than to the concept of emplacement, as in Section 2(9) of the Nuclear Waste Policy Act; the Commission believes that in each instance the term is defined in a manner appropriate to its context, and that the differences in the definitions will not result in confusion or conflict.

"Disturbed zone." The term "disturbed zone" has been modified to relate changes in the physical or chemical properties of the controlled area to the performance of the geologic repository.

"Engineered barrier system." This term refers to the system for which containment and release rate requirements are specified. It does not include the shafts and boreholes, and their seals. The proposed rule referred instead to "engineered systems," a term that was misleading because it could be understood to include shaft and borehole seals. However, the Commission recognizes that as used in the Nuclear Waste Policy Act of 1982, the related term "engineered barriers" might be construed to include shaft and borehole seals. The NRC will review whether the definition requires change in light of the Nuclear Waste Policy Act. Preliminary review does not indicate a need for change in this definition.

"Far field." The term "far field" has been deleted from the rule. Therefore, the definition is no longer necessary.

"Floodplain." Deleted. This definition was taken from Executive Order 11988, which relates to environmental consequences of occupancy and modification of floodplains. Those effects need to be considered as part of the Commission's environmental review, but they do not implicate the radiological concerns that are addressed in Part 60. The term "floodplain" still appears in § 60.122(c)(1). However, rather than establishing any particular frequency as the means for defining its extent, the Commission will allow the factors specified in § 60.122(a)(3) to be used in assessing the significance of flooding, whenever it may occur.

"Geologic repository." Clarifying change, to bring the terminology into line with common usage. The new definition includes only that portion of the geologic setting that provides isolation—not the entire geologic setting. The term, as defined, is considered to be synonymous with "repository" as defined at Section 2(18) of the Nuclear Waste Policy Act. (The added clause "or may be used for" conforms to the statutory definition as well as the definition in existing Part 60).

"Geologic setting." See *Terminology*, above. The phrase "spatially distributed" was superfluous and has been deleted.

"High-level radioactive waste." The Nuclear Waste Policy Act distinguishes between "high-level radioactive waste" and "spent nuclear fuel." These technical criteria are applicable equally to both categories. Accordingly, no change in the definition of high-level radioactive waste is required at this time.

"Important to safety." See *"Important to Safety,"* above.

"Medium" or "geologic medium." Deleted. For the sake of clarity, the term "medium" is now replaced by "geologic medium" throughout the rule. Since the term "geologic medium" should be sufficiently clear to the professional community, it no longer appears necessary to define it.

"Overpack." This term has been deleted. Because the overpack could be a component of the waste package, it was included in the definition of the term "waste package." However, this term is not used in the final rule.

"Performance confirmation." The final rule's performance objective with respect to retrievability of the waste refers to the completion of a performance confirmation program and Commission review of the information obtained from such a program. The addition of this definition is intended to

clarify the intended purpose of the performance confirmation program.

"Permanent closure." New. See *Decommissioning*, above.

"Restricted Area." New. See *Important to Safety*, above.

"Retrieval." New. See *Retrievability*, above.

"Saturated zone." New. Since the performance objectives in the final rule specifically refer to disposal in the saturated zone, a definition derived from Water Supply Paper 1988 (U.S.G.S., 1972) has been included.

"Site." See *Terminology*, above.

"Stability." Deleted. See *Siting Criteria*, above. Also, *Section by Section Analysis*, § 60.113, below.

"Subsurface facility." Deleted. Both "subsurface facility" and "underground facility" were defined in the proposed rule. The use of the two closely similar terms resulted in some confusion. "Subsurface facility" has been deleted and replaced (see definition of "Permanent closure") by explicit reference to shafts and boreholes, as well as the underground facility, where appropriate.

"Transuranic wastes." Deleted. See *Transuranic Waste*, above.

"Unanticipated processes and events." New. See *Human Intrusion*, above.

"Waste form." Clarifying change to bring terminology into line with comon usage.

"Waste package." Revised. Commenters questioned the clarity of this proposed definition and one commenter suggested an alternative definition. One commenter misinterpreted the proposed definition to require that the outermost component of the waste package be an airtight, watertight sealed container. The revised definition no longer uses the terms "discrete backfill" or "overpack," which were ambiguous. To the extent that absorbent materials or packing are placed around a container to protect it from corrosion by groundwater, or to retard the transport of radioactive material to the host rock, these materials would be considered part of the waste package. However, while the final rule no longer imposes a requirement for an airtight, watertight, sealed container as part of the waste package, the Commission believes it likely that DOE will incorporate such a component into the design of the waste package in order to meet the performance objectives for the engineered barrier system for the period following permanent closure. The related terms "disposal package" and "package," as defined at Section 2(10) of the Nuclear Waste Policy Act, include unspecified overpacks; for purposes of the Commission's rules, and specifically in connection with the performance objective set out at § 60.113(a)(1)(ii)(A), a more precise definition is needed. The differences in the definitions will not, in the judgment of the Commission, result in confusion or conflict.

"Water table." New. Required because the term appears in the definition of "saturated zone." The definition is derived from Water Supply Paper 1988 (U.S.G.S., 1972).

Section 60.10 Site characterization.

One amendment clarifies the point that investigations shall be conducted in such a manner as to limit adverse effects; the original language could have been construed to mean that the purpose of the investigations was to limit such effects. The provision calling, as a minimum, for the selection of borehole locations to limit subsurface penetrations was said to be confusing; the revision, which expresses the Commission's intention more clearly, includes a phrase that emphasizes that the number of penetrations must be adequate to obtain needed site characterization data. References to the "repository" have been replaced by terms that are more appropriate in their context.

Section 60.11 Site characterization report.

The ambiguous term "repository" has been replaced by defined terms ("geologic repository operations area" and "geologic repository") as appropriate in the context (in § 60.11(a)(6)(ii)).

Section 60.21 Content of application.

Section 60.21(c)(1)

Proposed § 60.21(c)(1) called for information regarding subsurface conditions "in the vicinity of the proposed underground facility." This has been clarified to refer to the controlled area and to other areas to the extent that subsurface conditions there may affect isolation within the controlled area.

Section 60.21(c)(1)(i)

The requirement for analysis of potential pathways has been extended to include "potentially permeable features" whether or not they are, as stated in the proposed rule, "permeable anomalies." Whether the feature is actually permeable or anomalous is not the point; what matters is the potential permeability.

The adjective "bulk," as applied to geomechanical, hydrogeologic, and geochemical properties, has been deleted as ambiguous and confusing.

Section 60.21(c)(1)(ii)(A)

Clarifying change to include analysis of climatology as well as meteorology.

Section 60.21(c)(1)(ii)(B) [§ 60.123(b)]

This paragraph concerns analyses of the favorable and potentially adverse conditions listed in § 60.122. The addition of language pertaining to the depth and breadth of investigations assures that the information needed to analyze these conditions will be available for NRC review. This is a modification of proposed § 60.123(b) for conduct of such investigations. The modification ties the extent of investigations to effects of potentially adverse conditions on waste isolation within the controlled area, rather than to specified distances, as originally proposed.

Section 60.21(c)(1)(ii)(C)

References to "expected" performance and releases have been deleted from § 60.21(c)(1)(ii)(C) because, as revised, the evaluation must also take into account the assumed occurrence of unanticipated processes and events. Since the performance objectives provide for consideration of unanticipated processes and events, relevant information must be included in the safety analysis report. The evaluation is limited to periods after permanent closure, as the option to retrieve the wastes is available earlier.

Section 60.21(c)(1)(ii)(D) [§ 60.21(c)(3)(iii)]

This paragraph reflects text that formerly was in § 60.21(c)(3). The latter paragraph relates to structures, systems, and components "important to safety." The term "important to safety," as used in the final rule, pertains to the period of operations. Because the requirement for evaluating the effectiveness of the barriers was directed to questions regarding containment and isolation, it was relocated so as to place it in the proper context.

Section 60.21(c)(1)(ii)(E) [§ 60.21(c)(1)(ii)(D)]

This paragraph, as proposed, was duplicative insofar as it related to performance of the geologic repository after permanent closure. It has therefore been revised so as to pertain solely to identification of structures, systems, and components important to safety. [As in § 60.21(c)(1)(ii)(C) reference to "expected" has been deleted as confusing.]

Section 60.21(c)(1)(ii)(F) [§ 60.21(c)(1)(ii)(E)]

This paragraph has been revised to require that analyses and models used to predict future conditions and changes in the geologic setting be "supported by" rather than "confirmed by" an appropriate combination of methods such as enumerated in the rule. Such support concerns not only the reliability of the codes themselves, but also the representativeness of the models with respect to the physical conditions of the site. The Commission recognizes that confirmation, in the strict sense, is not achievable. The term "field verified laboratory tests" has been clarified to read "laboratory tests which are representative of field conditions."

Section 60.21(c)(4)

Section 60.21(c)(4) has been amended to reflect the limitation on the scope of "important to safety." The footnote reference to 10 CFR Part 50 has been deleted because of the cross-reference contained in Subpart G.

Section 60.21(c)(8)

Section 60.21(c)(8) required a description of controls to restrict access. After permanent closure, monuments will be an important control. The paragraph has been amended to require that a conceptual design of such monuments be provided.

Section 60.21(c)(9) and § 60.21(c)(11)

Conforming changes required by elimination of the term "decommissioning."

Section 60.21(c)(13)

The changes in this paragraph reflect the revised definitions of "geologic setting," "site," "geologic repository," and "disturbed zone." No substantive change is intended.

Section 60.21(c)(14)

Conforming change reflecting limitation of "important to safety" to concerns related to the period of operations.

Section 60.21(c)(15)(i)

Editorial change limiting information on DOE organizational structure to that which pertains to construction and operation of the geologic repository operations area.

Section 60.21(c)(15)(ii)

Removed. This provision was redundant with § 60.21(c)4. (Subsequent paragraphs have been renumbered.)

Section 60.21(c)(15)(vi).

Conforming change required by elimination of the term "decommissioning."

Section 60.21(c)(15)(vii) [§ 60.21(c)(15)(viii)].

Conforming change reflecting limitation of "important to safety" to concerns related to the period of operations.

Section 60.22 Filing and distribution of application.

Section 60.22(a) has been revised to conform to § 60.3(a). In both places, the rule now refers to receipt and possession of source, special nuclear, and byproduct material "at a geologic repository operations area."

The reference in § 60.22(d) to "geologic repository" has also been changed to "geologic repository operations area", as the latter term is a more precise designation of the HLW facility that is the subject of the proposed licensing action.

Section 60.31 Construction authorization.

The overall safety finding is related to the "geologic repository operations area" because that term refers to the HLW facility subject to NRC licensing authority. [This is also the reason for the change in § 60.31(a)(1)(ii).] In order to assure that the relevant features of the controlled area are considered in arriving at this finding, § 60.31(a)(2) now specifically refers to consideration of the "geologic repository." Because siting and design criteria are supplemental to performance objectives in Subpart E, § 60.31(a)(2) has been amended to provide for evaluation of the geologic repository's compliance with the performance objectives as well. The reference to Subpart F has been deleted; that subpart, which pertains to DOE's performance confirmation program, is now referenced in § 60.74

Section 60.32 Conditions of construction authorization.

The change of "site data" to "data about the site," in § 60.32(b), is a clarifying editorial amendment.

In § 60.32(c), "repository" has been replaced by the defined term "geologic repository." The restrictions that may be imposed under this paragraph can include measures to prevent adverse effects on the geologic setting as well as measures related to the design and construction of the geologic repository operation area.

Section 60.43 License specifications.

Section 60.43(b)(3) has been clarified by substituting "host rock" for the ambiguous and undefined term "storage medium" that previously appeared.

Section 60.43(b)(5) has been amended to require that license conditions include items in the category of controls related to the controlled area rather than the geologic repository operations area. This is a conforming change, which is made possible by the new definition of "controlled area" as an area which may extend beyond the boundaries of the geologic repository operation area. However, since additional controls may be needed outside of the controlled area (see § 60.121), the provision is not limited to the controlled area alone. Under 10 CFR Part 20 and this part, the licensee will have to establish restricted areas for purposes of assuring radiological protection during the period of operations, but this will not necessarily require the incorporation of specific conditions in the license. (See 10 CFR 50.36, a corresponding provision in the Commission's facility licensing regulations.)

Section 60.46 Particular activities requiring license amendment.

Section 60.46(a)(3) has been amended for the reasons stated in the discussion of § 60.43(b)(5), to refer to the controlled area. This requirement would continue to be applicable even after permanent closure unless and until the license is terminated pursuant to § 60.52.

Section 60.46(a)(6). See *Decommissioning*, above.

A conforming change has been made to § 60.46(a), "Particular activities requiring license amendment," which adds a new paragraph (a)(7) to make clear that any activity involving an unreviewed safety question requires a license amendment. In its proposed form § 60.46(a) could have been read to require a license amendment only for the six specific activities listed. While the enumerated activities are quite broad and may well include any change involving an unreviewed safety question, the conforming language is intended to make this point explicit. It is of course clear that an amendment would also be necessary to accomplish a change in the license conditions incorporated in the license. (The revision in no way affects the authority of DOE, under § 60.44(a)(1), without prior Commission approval, to make changes, tests, or experiments that involve neither a change in the license conditions incorporated in the license nor an unreviewed safety question.)

Section 60.51 License amendment for permanent closure.

Conforming changes have been made to refer to "permanent closure" instead of "decommissioning." See *Decommissioning*, above.

The area required to be identified is now stated to be the "controlled area" because that encompasses the region in which waste isolation is required.

The significance of preserving information is discussed in the section on *Human Intrusion*, above. To assure complete recording of the location of the geologic repository, the Commission has now provided for information to be placed in land record systems as well as archives; this better reflects its original intention. It also includes a reference to State government agencies in order to further assure comprehensiveness. It is not the Commission's intention to require that any new systems or archives be created, but only that those that are available and appropriate should be employed. A further modification expresses the intention that information concerning the detailed location of the underground facility and boreholes and shafts, as well as the boundaries of the controlled area, must be recorded.

In § 60.51(a)(4), the undefined phrase "emplacement media" has been changed to "host rock."

Section 60.52 Termination of license.

Conforming changes. See *Decommissioning*, above.

Subpart D—Records, Tests, and Inspections.

There are two substantive changes in Subpart D. First, the specification of required construction records has been determined to be more appropriately included here rather than in the design criteria in Subpart E. Editorial changes, including renumbering of sections, have been made to accomplish this. Second, the final rule now requires not only that the geologic repository operations area be designed so as to permit implementation of a performance confirmation program but, as the Commission had originally intended, that such a performance confirmation program should actually be required to be carried out.

Section 60.71 General recordkeeping and reporting requirement.

Paragraphs (a) and (b) have been retained. Paragraph (c) is moved to § 60.73. The caption has been changed because records and reports are now treated in §§ 60.71–60.73, rather than § 60.71 alone.

Section 60.72 Construction records [§ 60.134(c)].

Transferred from Subpart E. Survey records are to cover "underground facility excavations, shafts, and boreholes" rather than "underground excavations and shafts." This makes the inclusion of borehole records explicit. A clarifying amendment was made to indicate that the records must include a description of materials encountered rather than the materials themselves.

Section 60.73 Reports of deficiencies [§ 60.71(c)].

Renumbered. The change of "site characteristics" to "characteristics of the site" is editorial.

Section 60.74 Tests. [§ 60.72].

A new paragraph (§ 60.74(b)) of a clarifying nature has been added which requires tests carried out under this section to include a performance confirmation program carried out in accordance with Subpart F of this part. The proposed rule inadvertently did not require such a program, merely a description of one.

Section 60.75 Inspections. [§ 60.73]

References to "site" have been changed to "geologic repository operations area" or "location" where appropriate. See *Terminology*.

Subpart E—Technical Criteria

Section 60.101 Purpose and nature of findings.

A change has been made to § 60.101(a)(2) with respect to evaluations of performance of the engineered barrier systems and geologic media. The point that is being made is that the further into the future one must project, the greater the uncertainties will be. The Commission did not mean to suggest that the specific period of a thousand years is especially significant; the more general "many hundreds of years" specified in the final rule better expresses the Commission's intent.

A sentence has been added to § 60.101(a)(2) that emphasizes that demonstration of compliance with long-term performance objectives and criteria will involve the use of data from accelerated tests and suitably supported predictive models.

A reference to "repository" in § 60.101(b) has been changed to "geologic repository operations area" to conform with a parallel change in § 60.31.

Section 60.102 Concepts.

An introductory paragraph has been added to explain the purpose of this section and to indicate that it is subordinate to the definitions contained in § 60.2

See *Transuranic Waste (TRU)*, above, with respect to the deletion of the reference to TRU.

The section on *Terminology*, above, explains changes affecting the terms "accessible environment," "controlled area," "geologic setting," and "site." These changes are reflected in amended § 60.102(c). The reference to the host rock was deleted so as to avoid any implication that other characteristics of the geologic setting might not, where appropriate, also receive "particular attention."

See *Decommissioning*, above, for an explanation of the change in the discussion of "permanent closure." Because activities unrelated to waste isolation may continue at the geologic repository operations area after permanent closure, the last sentence of § 60.102(d) has been deleted.

The treatment of containment and isolation has been consolidated in light of changes made in the performance objectives. The reference to assessment of uncertainties instead of prediction of consequences takes into account the need to compensate for a broader range of factors, such as identification of the events which are to be considered in the license review. See *Reasonable Assurance* and *Anticipated/Unanticipated Processes and Events*, above. A second reason for the change stems from a commenter's criticism of the statement that consequences of events are "especially difficult to predict rigorously" early during the life of a repository; on the contrary, he suggested, consequences would be more difficult to predict over longer periods of time. The matter need not be resolved in those terms. The point the Commission was trying to make is that containment measures are appropriate to compensate for the uncertainties involved in assessing radionuclide transport in the presence of high radiation and thermal levels.

The respective contributions of the engineered barrier system and the geologic setting to the achievement of isolation are highlighted in a new sentence. Other changes are made to conform with revised definitions. See analysis of § 60.2.

Performance Objectives

Section 60.111 Performance of the geologic repository operations area through permanent closure. [§ 60.111(a)].

The provisions of § 60.111(a) dealing with radioation protection and releases

of radioctive material for the period through permanent closure of the underground facility are unchanged in substance from the proposed rule. The paragraph has been renumbered and some editorial changes have been made.

The provisions of § 60.111(b) dealing with retrievability of waste have been modified to link the period of retrievability more closely to the performance confirmation program and to allow the Commission to modify the retrievability period on a case-by-case basis based on the waste emplacement schedule and the planned performance confirmation program. The final rule also specifies that the period of retrievability begin at the initiation of waste emplacement rather than after waste emplacement is complete. Finally, the final rule explicitly states that backfilling of portions of the underground facility is not precluded, provided the retrievability option is maintained, and that the Commission may decide to allow permanent closure of the underground facility prior to the end of the designed retrievability period. While these provisions were discussed in the supporting information, they were not explicitly stated in the proposed rule. Also see *Retrievability*, above.

Section 60.112 Overall system performance objective for the geologic repository after permanent closure. [§ 60.111(b)(1)].

The term "subsurface facility" has been deleted, as explained in the analysis of § 60.2, and conforming changes have been made.

There is no conceptual difference between the proposed rule's reference to releases *from the geologic repository* and the final rule's reference to releases *to the accessible environment*. The Commission prefers the latter formulation because it more closely conforms to the standard-setting authority of EPA. The proposed rule's definition of "accessible environment" was too general to allow such an approach. Under the final rule, however, the subsurface portions of the accessible environment and the geologic repository are contiguous. See *Terminology*, above.

See also the discussion, above, relating to *Anticipated/Unanticipated Processes and Events*.

Several commenters recommended that it would be preferable to leave the rule in proposed form until the EPA standard had been published, at which time NRC could adapt its regulations to the standards that EPA actually promulgates. The Commission would, of course, prefer to have final EPA rules available; and, if they were, it could build EPA's provisions, where appropriate, into Part 60. In the absence of the final EPA standard, however, the Commission deems it important to provide not only to DOE but also to other interested persons, including governmental institutions, firm guidance with respect to the Commission's regulatory approach. As discussed under *Single vs. Multiple Performance Standards*, above, the technical criteria provide some flexibility to take into account a range of standards that might be adopted by EPA. Should such standards, when adopted, depart from those that the Commission has assumed for purposes of analysis, the Commission would consider whether further rulemaking on its part would be desirable. The procedure that is being followed conforms to that prescribed by Section 121(b) of the Nuclear Waste Policy Act. See also the discussion regarding *Population vs. Individual Dose*.

Section 60.113 Performance of particular barriers after permanent closure. [§ 60.111(b)(2)–(3); § 60.112].

The performance objectives for particular barriers have been modified for reasons discussed at length above.

The analysis of *Single vs. Multiple Performance Standards* explains the basis for retaining numerical values, while allowing them to be modified as the particular case warrants. The factors alluded to there as among those that might be taken into account are set out in § 60.113(b). § 60.113(c) reflects the observation there that considerations related to unanticipated processes and events could form the basis for additional performance requirements for individual barriers.

For the reasons presented under the heading *ALARA*, above, the Commission has elected not to apply an ALARA principle to the performance requirements in this section.

The reasons for elimination of requirements referring specifically to TRU are described in the section on *Transuranic Waste*, above. It should be noted, however, that the release requirements in § 60.113 apply to all radionuclides, including those that may be contained in any TRU that may be disposed of at a geologic repository operations area.

The proposed rule required an assumption that groundwater saturate the facility and that the performance of the waste packages be evaluated on this basis. This approach was proposed because mechanisms exist for groundwater transport to the underground facility, in salt formations as well as hard rock. It may not always be necessary or technically reasonable to assume the specified saturation conditions, provided that appropriate evaluations are made in the context of a particular application; the final rule therefore calls for the partial and complete filling with groundwater of available void spaces in the underground facility to be considered and analysed among the anticipated processes and events in designing the engineered barrier system. This provision would not appear to be needed for disposal in the unsaturated zone, even though there may be water transport from the underground facility, primarily because the design can, in principle, provide for adequate drainage. (Criteria applicable to disposal in the unsaturated zone will be the subject of additional rulemaking.) Other changes in the provision are of a clarifying or editorial nature.

Editorial changes have been made to avoid repetitious language in the performance objectives relating to the engineered barrier system's containment and controlled-release capabilities.

The proposed requirement with respect to containment would have specified that the HLW waste packages contain all radionuclides for at least the first 1,000 years after permanent closure. In response to comments relating to the demonstrability of a design to contain "all" radionuclides for an extended period, the Commission has modified the requirement so that the design must provide "substantially complete" containment. The reason for relying on containment as one means for assuring achievement of the overall system performance objective is that many sources of uncertainty are particularly significant during the period when radiation and thermal conditions in the underground facility are dominated by fission product decay. This period will depend, to some extent, on the characteristics of the particular facility. The Commission has therefore allowed the containment period to be fixed, where appropriate, at a shorter period. See, also, the discussion of *Single vs. Multiple Performance Standards*.

The incorporation of a general standard for release of radionuclides from the engineered barrier system ("a gradual process which results in small fractional releases to the geologic setting over long times") places the specific criteria into context, thereby emphasizing the policy objective underlying these criteria. Moreover, it indicates the close relationship between the provisions dealing with containment and limited release. These are coupled parameters that should not be varied independently, but rather should be

viewed as a system to control the release to the geologic setting. Again, see *Single vs. Multiple Performance Standards.*

The fractional release rate has been modified slightly to eliminate an ambiguity identified by one commenter. The new language makes it clear that "one part in 100,000 per year" refers to the activity at 1,000 years following permanent closure. This is a substitute for 1 part in 100,000 of the maximum inventory of the particuler radionuclide at any time after 1,000 years after permanent closure. The underlying concern in the proposed rule was that the amounts of certain radionuclides, such as Ra–226 and other actinide daughters, increased with time, and that it was necessary to consider the maximum inventory of these nuclides in assessing repository performance. The analyses performed in the rationale document indicate that these nuclides are not important with respect to meeting the EPA standard as presently formulated. Accordingly, the Commission has chosen the less complicated formulation that appears in the final rule. It should be noted that the release rate refers to activity at 1,000 years after closure, even though a different containment period may be approved or specified by the Commission; the rate may also be modified, however, under the provisions of the final rule. DOE, in its comments on the proposed rule, suggested that the fractional release rate requirement should not apply to nuclides that constituted less then 0.1% of the inventory remaining at 1,000 years. This recommendation has not been adopted since it could lead to excessive releases. Table 5 of the rationale document in NUREG–0804 shows that the inventory of radioactive material in a repository containing 100,000 metric tons of spent fuel is 1.7×10^8 curies after 1,000 years. The DOE suggestion would eliminate nuclides whose inventories were less than 170,000 curies from consideration of their release rate from the engineered barrier system, whereas the NRC provisions of § 60.113(a)(1)(ii)(B) would eliminate nuclides whose release rates were less than 1.7 curies/yr from further consideration. While the Commission has not adopted the recommended change it notes that, under the provisions of the final rule, DOE could recommend an alternative release rate for nuclides in the light of the standard adopted by EPA or the geochemical characteristics of the host rock, surrounding strata, and groundwater. In particular, the characteristics of the host rock immediately adjacent to the underground facility may be well understood because of the excavation activities and, where appropriate, such characteristics could be taken into account in specifying the nuclide release rate.

The previously proposed performance objective for the geologic setting [§ 60.111(b)(3)] has been deleted. The new definition of "anticipated processes and events" includes the assumption that processes operating in the Quaternary Period continue to operate but with perturbations caused by the presence of emplaced radioactive waste superimposed thereon. The remainder of the proposed paragraph merely restates part of the overall system performance objective with respect to performance of the geologic setting and would be redundant.

The references to "stability" in the geologic setting since the start of the Quaternary Period have been deleted. What the Commission had intended was that the structural, tectonic, hydrogeologic, geochemical, and geomorphic processes be such as to enable the recent history to be interpreted and to permit near-term geologic changes to be projected with relatively high confidence. The selection of the term "stability" to convey this meaning was unfortunate. Commenters correctly pointed out that a geologic setting can only be said to exhibit stability in a relative sense. As they noted, the proposed rule gave no guidance as to the degree of required stability and, accordingly, the provision would introduce ambiguity with respect to one of the major elements of the geologic repository. The factors the Commission had identified are all important, but the appropriate way to consider them is to assess them in the context of favorable and unfavorable conditions and to evaluate the extent to which the geologic repository's achievement of the overall system performance objective might be affected. If the relevant processes are not well understood, one or more of the potentially adverse conditions will be exhibited and such an evaluation will be required.

The pre-waste-emplacement groundwater travel time provision is subject to adjustment on a case-by-case basis. See *Single vs. Multiple Performance Standards.* A clarifying amendment relates the travel time provision, as previously only implied, to the "fastest path of likely radionuclide travel from the disturbed zone to the accessible environment." Relating this provision to the "disturbed zone" instead of the "far field" involves no substantive change. As stated in the analysis of § 60.2, the term "far field" has been deleted from the rule.

Some commenters suggested that the groundwater travel time be expressed in terms of post-emplacement as well as pre-emplacement conditions. This assumes that post-emplacement changes would be significant. By definition, however, the portion of the geologic setting significantly affected by waste emplacement constitutes the "disturbed zone." The groundwater travel time provision applies to transport from the disturbed zone to the accessible environment. This parameter is not dependent upon the effects of waste emplacement.

One commenter characterized the travel time performance objective as "invalid" without a clear definition of "accessible environment." The Commission agrees that the proposed rule was subject to a number of interpretations. However, the modified definition provides a means for delineating the limits of the accessible environment so as to take proper account of site-specific conditions. Under this revised definition, a subsurface area extending no more than 10 kilometers from the underground facility may be used to isolate the waste from the accessible environment. This, in effect, places an upper limit on the rate of groundwater travel to the accessible environment. Refer to the discussion of "accessible environment" and "controlled area" under *Terminology*, above.

Land Ownership and Control

Section 60.121 Requirements for ownership and control of interests in land.

The proposed rule set out ownership and control requirements for the "geologic repository operations area." The text, however, related these requirements to the achievement of isolation. To express this concept properly, the Commission has made the requirements in §60.121(a) applicable not only to the geologic repository operations area, but to the controlled area as well. Section 60.121(b), which deals with isolation and not with the period of operations, is amended so as to refer to the controlled area. (The reference here to the "geologic repository" instead of "site or engineered system" is not substantive; it reflects the revised definitions identified in the analysis of § 60.2.) A conforming change has also been made to the caption of the section.

In response to a commenter's suggestion, the acquisition of appropriate water rights is now explicitly required. This will not necessitate any separate action on the part of DOE if it appears that such needed water rights have been obtained, by implication, as a result of reservation or acquisition of lands. See *U.S.* v. *New Mexico*, 438 U.S. 696 (1978), *Cappaert* v. *U.S.*, 426 U.S. 128 (1976). The "purpose of the geologic repository operations area" is intended to be construed broadly to include the isolation of radioactive wastes after permanent closure as well as any water rights needed during the period of operations.

The Commission declines an invitation to define a specific area that must be acquired to assure public health and safety prior to permanent closure. The size of this area will depend upon the particular activities to be carried out by DOE. There must be an "unrestricted area" to which releases of radioactive materials will be maintained within the limits specified in 10 CFR Part 20. § 60.111(a). The establishment of this unrestricted area must also take accidents into consideration, since structures, systems, and components "important to safety," as defined in § 60.2, must be designed so as to limit radiation doses under accident conditions to 0.5 rem at the boundary of the unrestricted area.

Siting Criteria

Section 60.122 Siting criteria. [§ 60.122–60.124].

The following detailed comments supplement the discussion under the caption *"Siting Criteria"* in the main text, above.

Section 60.122(a) consolidates the introductory paragraphs of proposed §§ 60.122 and 60.123, together with proposed § 60.124. This change is designed to provide a clearer statement of the relationship between the favorable and potentially adverse conditions. The revised language makes it clear that all such conditions relate to isolation of the waste after permanent closure.

Proposed § 60.124 had specified ways to demonstrate that potentially adverse conditions would not "impair significantly" the isolation ability of the geologic repository. This has been modified so as to refer instead to "compromise" of such site suitability. This change is made to eliminate any question regarding the difference between the two terms. No such difference was intended. Both terms relate to conditions which would potentially preclude the Commission from finding that the geologic repository would achieve the performance objectives.

The rule now provides for evaluating the effect of the potentially adverse conditions on the "site" rather than the "geologic setting" or "disturbed zone." See *Siting Criteria*, above.

In the provision which states that potentially adverse conditions may be compensated by the presence of favorable conditions, the Commission has specified the standard for measuring the adequacy of such compensation—namely, achievement of the performance objectives relating to isolation of waste.

Section 60.122(b)(1) [§ 60.122(a)–(e)].

Proposed paragraphs 60.122 (a), (c), (d), and (e) have been consolidated for editorial reasons. Even if some of the cited processes might have an adverse effect on the geologic repository's ability to isolate the waste, the Commission intends that the other processes may nevertheless be treated as favorable conditions. The distinction between "tectonic" and "structural" processes is so "fine," as it was characterized by one commenter, that the final rule uses only the former term. The references to "the start of the Quaternary Period" have been removed because of the difficulties that might be involved in dating this point with precision; for present purposes, all that is important is that processes "operating during the Quaternary Period" be identified and evaluated, and this is reflected in the revised language. Note the fact that while the provision, as before, applies to favorable conditions in the "geologic setting," the broader definition of that term in the final rule recognizes that processes operating more remotely from the geologic repository must be taken into account.

Section 60.122(b)(2) [§ 60.122(f)].

The proposed rule included siting criteria applicable only to disposal in the saturated zone. This paragraph adapts the provision that dealt with hydrogeologic conditions in the host rock and is appropriately limited to the saturated zone option. The Commission no longer identifies "low groundwater content" as a favorable condition because it is the rate and direction of groundwater movement rather than the amount of groundwater present that is of primary significance; thus, instead, the final rule substitutes a reference to low permeability and downward hydraulic gradient. This change also addresses more clearly the prior consideration about inhibition of groundwater circulation in the host rock. Similarly, instead of referring to inhibition of groundwater flow between hydrogeologic units, the Commission specifies the properties which result in such inhibition, namely low vertical permeability and low hydraulic potential. Since the paragraph relates to the host rock, the reference to shafts, drifts, and boreholes was not fully appropriate and, in any event, is dealt with by identification of the pertinent properties.

The reference to groundwater travel time has been modified to conform with the language of the related performance objective. The proposed rule measured this property from the underground facility. However, the changes that may occur in the disturbed zone may negate the favorable condition in that part of the geologic setting and, accordingly, the final rule specifies that the travel time in question is to be measured from the disturbed zone to the accessible environment. There is no basis for identifying a particular number of years that will be deemed to be substantially in excess of 1,000 years. If for a particular site the value is sufficiently high to enhance the Commission's confidence that the performance objectives will be met, then it can appropriately be considered as a favorable condition.

Section 60.122(b)(3) [§ 60.122(g)].

Since the listed geochemical conditions may or may not occur simultaneously, yet since any of them may retard the transport of radionuclides, the paragraph has been stated in the disjunctive in the final rule (by substituting "or" in the place of "and").

Section 60.122(b)(4) [§ 60.122(h)].

This paragraph concerns transformation of "mineral assemblages" under thermal loading. It would be a favorable condition if changes left the capacity to inhibit radionuclide transport unaffected; the proposed rule, which spoke only of "increased" capacity, was too restrictive.

The paragraph is concerned primarily with the behavior of mineral assemblages which form coatings along the fracture paths along which radionuclides are anticipated to migrate; it would be incorrect, when referring to this surface zone, to adopt a commenter's suggestion that the Commission refers instead to "rock" or "geologic media."

Section 60.122(b)(5) [§60.122(i)].

This paragraph, relating to depth of emplacement, is unchanged. The

purpose of the provision is to reflect the consideration that wastes buried at least 300 meters below the surface are less subject to disturbance, especially by human intrusion, than wastes closer to ground level would be. As in the case of other favorable conditions, it should be emphasized that the absence of a particular one or more of them does not rule out a site or even demand explanation; it simply means that other favorable conditions must be cited to show that the criterion set out in § 60.122(a)(1) has been satisfied. (The elevation being referred to is the altitude above mean sea level of the lowest point on the surface but the Commission perceives no need to express the concept, as one commenter had suggested, in such detail)

Section 60.122(b)(6).

New. See *Population—Related Siting Critera*, above.

Section 60.122(j)].

The proposed rule would have treated as a favorable condition "any local condition of the disturbed zone that contributes to isolation." This was criticized as being unduly general and vague. As the key favorable conditions appear to have been identified, the Commission has concluded that inclusion of such a "catch all" is unwarranted.

Section 60.122(c)(1) [§ 60.123(a) (1) and (6)].

This paragraph is adapted from two provisions of the proposed rule. Unlike most of the potentially adverse conditions, the prospect of flooding is of most concern prior to permanent closure. Even though criteria in § 60.133 provide that the underground facility be designed to handle water intrusion, the anticipated design features need not be sufficient to cope with massive inflows that could result from submersion of boreholes and shafts. Should such a situation develop, the ability of the geologic repository to achieve isolation of the wastes that had been emplaced could be compromised.

Because the concern relates to waste isolation, the paragraph has been rewritten so as to be limited to flooding of the underground facility. The design criteria for structures, systems, and components important to safety require that appropriate measures be taken to protect surface facilities against the consequences of flooding.

As there is no reason to differentiate between floods resulting from natural causes (i.e., from occupancy and modification of floodplains) and those resulting from failure of impoundments, the two pertinent paragraphs have been combined.

With respect to required investigations [§ 60.123(b)], see Section-by-Section Analysis, § 60.21(c)(1)(ii)(B).

Section 60.122(c)(2) [§ 60.123(a) (2) and (3)].

Two paragraphs related to the groundwater flow system have been consolidated. The conditions are to be regarded as potentially adverse if the activities in question are "foreseeable." This is more conservative than the original rule, which only identified "planned" activities. The proposed rule encompassed such activities with a potential to "significantly" affect groundwater flow. Any "adverse" effect should be treated as significant, and the final rule makes a change to reflect this.

Section 60.122(c)(3) [§ 60.123(a)(7)].

No substantive change from proposed rule.

Section § 60.122(c)(4) [§ 60.123(b)(8)].
[§ 60.123(b)(5)].
[§ 60.123(b)(6)].
[§ 60.123(b)(7)].

Structural deformation would have been regarded as a potentially adverse condition only if occurring within the disturbed zone during the Quaternary period. This approach was unduly limiting. Structural deformation in the geologic setting, whether or not of recent origin, is potentially adverse because of the effects which it may have upon the regional groundwater flow system. Of course, it is to be expected that structural deformation remote from the site, especially if ancient, can readily be found not to significantly affect the ability of the geologic repository to isolate the waste. Still, it is a potentially adverse condition and should be recognized as such.

Faulting is one kind of structural deformation. By including it here, the prior specific references to faulting can be eliminated.

Section 60.122(c)(5) [§ 60.123(b)(12)].

This paragraph is no longer restricted to the disturbed zone, but otherwise is unchanged in substance.

Section 60.122(c)(6) [§ 60.123(a)(8)].

The proposed rule referred to "expected climatic changes." Climatology is not sufficiently understood to enable us to limit our concern to "expected" changes, and the final rule therefore refers to characteristics of the geologic setting likely to be affected directly by reasonably foreseeable climatic change, viz, the hydrologic conditions.

Section 60.122(c)(7) [§ 60.123(b)(14)].

This paragraph referred to groundwater conditions that could "affect" solubility and chemical reactivity. The concern is not with effects *per se*, but rather with effects that increase the solubility or chemical reactivity of the engineered barrier system. This was not made explicit. In order to be more comprehensive, chemical composition of the host rock is added to the relevant groundwater conditions.

Section 60.122(c)(8) [§ 60.123(b)(15)].

Aside from the extension of this paragraph beyond the disturbed zone, there are no changes in substance. One clarifying addition, "of radionuclides," following "sorption" was made.

Section 60.122(c)(9) [§ 60.123(b)(13)].

This paragraph, related to non-reducing groundwater conditions, is only appropriate to disposal in the saturated zone.

Section 60.122(c)(10) [§ 60.123(b)(5)].

Dissolutioning will be treated as a potentially adverse condition throughout the geologic setting. Examples of the kinds of features that provide evidence of dissolutioning have been included so as to make it clear that the paragraph refers to processes that provide gross manifestations of their presence.

Section 60.122(c)(11) [§ 60.123(b)(8)].

No substantive changes.

Section 60.122(c)(12) [§ 60.123(a)(4)].

Section 60.122(c)(13) [§ 60.123(b)(10)].

Section 60.122(c)(14) [§ 60.123(b)(9)].

Section 60.122(c)(15) [§ 60.123(b)(11)].

Section 60.122(c)(16) [§ 60.123(b)(4)].

Extended from disturbed zone to the entire geologic setting, but otherwise unchanged.

Section 60.122(c)(17) [§ 60.123(b)(3)].

Consistent with the references to resources in the requirements for the content of the safety analysis report, § 60.21(c)(13), the presence on naturally occurrring materials for which economic extraction is currently feasible or potentially feasible during the foreseeable future may give rise to a potentially adverse condition. The provision now applies to the site, rather that the disturbed zone, since it is the site that provides isolation of the waste.

Section 60.122(c)(18) [§ 60.123(b)(1)].

Extended from the disturbed zone to the site.

Section 60.122(c)(19) [§ 60.123(b)(2)].

Extended from the disturbed zone to the site.

Section 60.122(c)(20) [§ 60.123(b)(16)].

The paragraph refers to "rock or groundwater" conditions that would require complex engineering measures. Although the engineering measures being referred to would be applied before permanent closure, the reason for having this criterion—as in the remainder of § 60.122(c)—stems from concerns about the ability of the geologic repository to satisfy the performance objectives with respect to isolation of the waste. Although complex engineering measures are not inherently unacceptable, their reliability must be carefully scrutinized in a licensing process. A geologic setting that requires the adoption of such complex engineering measures therefore can be viewed as exhibiting a potentially adverse condition. Although the final rule applies to the geologic setting instead of the disturbed zone, this paragraph would apply over only that part of the geologic setting that has features relevant to the selection of engineering measures.

Section 60.122(c)(21) [§ 60.123(b)(17)].

The criterion pertaining to stable underground openings is also unchanged in substance, except that it is no longer expressly limited to the disturbed zone. This is another criterion that pertains to the period of operations. However, like the preceding one, its underlying purpose is to assure that waste isolation objectives can be achieved. Failure of underground openings could result in the inability of the licensee to retrieve the wastes practicably, should such a course of action be found to be warranted. The consequence of this failure could be a transport of radionuclides to the accessible environment at levels exceeding the performance objectives.

Design Criteria for the Geologic Repository Operations Area

Section 60.130 Scope of design criteria for the geologic repository operations area. [§ 60.130(a)]

The separation of final § 60.130 from related sections is an editorial change.

As indicated in § 60.131, Subpart E is intended to specify site and design criteria. References to construction requirements are therefore inappropriate and have been deleted.

Section 60.131 General design criteria for the geologic repository operations area.

(a) Radiological protection. [§ 60.130(b)(1)].

Aside from editorial changes, the only revision relates to the design of the radiation alarm system; the language has been modified to conform to 10 CFR 72.74(b), and reference to radioactivity in effluents was deleted since this section has to do with radiation protection in restricted areas. Provisions for control of radioactivity in effluents are contained in § 60.131(b)(4), for emergency conditions, and in § 60.132(c), for normal operations.

(b) Structures, systems, and components important to safety.

(1) Protection against natural phenomena and environmental conditions. [§ 60.130(b)(2)].

The two proposed subparagraphs were duplicative and have been consolidated. The change of "site" to "geologic repository operations area" is appropriate because the concern being addressed is accident conditions at the HLW facility that could result in specified doses at the boundary. Similarly, "any relevant time period" has been deleted since this provision deals with the prevention or mitigation of accidents associated with waste storage and handling activities. Also, since it is accident conditions that are of concern, the provisions of the proposed rule dealing with operations, maintenance and testing were inappropriate and have been deleted. (The effects of natural phenomena and environmental conditions on waste isolation are addressed in § 60.122.)

(2) Protection against dynamic effects of equipment failure and similar events. [Section 60.130(b)(3)]

Editorial change, characterizing missile impacts as dynamic effects.

(3) Protection against fires and explosives. [Section 60.130(b)(4)]

The design criterion pertaining to continued operation during and after fires has been limited to such events as are "credible." This responds to comments that suggested that the proposed language could be interpreted to require protection against any fire or explosion that might be physically possible.

Because Subpart E is concerned with siting and design criteria, the Commission has not adopted a suggestion to incorporate, at this point, a requirement that explosives be excluded from areas containing radioactive materials. However, such a provision could be one of the license specifications found to be appropriate under § 60.43.

(4) Emergency capability [Section 60.130(b)(5)]

Provision has been made to require control of effluents during emergency conditions, see §§ 60.131(a). Otherwise unchanged.

(5) Utility services. [Section 60.130(b)]

Paragraph (i) has been clarified by inserting an explicit reference to systems "important to safety." Since the definition of "important to safety" refers to "accidents," the term "emergency conditions" has been changed to "accident conditions."

Proposed paragraph (iii) has been deleted because it was redundant with the general provision for inspection, testing, and maintenance.

Proposed paragraph (iv) [now (iii)] has been abbreviated. As proposed, it could have been interpreted as requiring systems, even if redundant, to be functional at all times. The intent was to assure that timely emergency power can be provided to structures, systems, and components important to safety. The provision has been modified accordingly. There is no need to state that emergency power be sufficient to allow safe conditions to be maintained, since this is implicit in the remainder of the text.

(6) Inspection, testing, and maintenance. [Section 60.130(b)(7)]

No change from proposed rule.

(7) Criticality control. [Section 60.130(b)(8)]

No change from proposed rule.

(8) Instrumentation and control systems. [Section 60.130(b)(9)]

The adjective "engineered" has been deleted, in reference to systems important to safety, so as to retain uniform terminology throughout the rule.

The provision for design "with sufficient redundancy to ensure that adequate margins of safety are maintained," which was criticized as being vague, has been deleted. The objective was to ensure that the design incorporate needed instrumentation and this has been accomplished more clearly by the amended language.

(9) Compliance with mining regulations. [Section 60.130(b)(10)]

No change from proposed rule. It should be noted that this provision is not intended to assert NRC authority over mining safety practices generally; but to the extent that the safety of workers is necessary for systems important to safety to perform their intended functions, the relevant design features are of legitimate concern to NRC.

(10) Shaft conveyances used in radioactive waste handling. [Section 60.133(c)]

The specific criteria applicable to hoists important to safety have remained unchanged. The general requirement that shaft conveyances used to transport radioactive materials be designed to satisfy the requirements for systems, structures, and components important to safety has been deleted because it was unduly broad; to the extent that the shaft conveyances are in fact important to safety, the applicable design requirements will still apply.

Section 60.132 Additional design criteria for surface facilities in the geologic repository operations area. [Section 60.131]

(a) Facilities for receipt and retrieval of waste. [Section 60.131(a)]

This paragraph has been shortened by deleting redundant and unnecessary detail. The requirement for safe handling and storage implies provision for inspection, repair, and decontamination as appropriate. Similarly, it is not necessary to state that surface storage capacity need not be provided for all emplaced waste; there must be sufficient capacity, however, to allow safe handling and storage.

(b) Surface facility ventilation. [Section 60.131(b)]

The only change is the reference to § 60.111(a) by paragraph. This is not a substantive amendment, as this is the only part of the performance objectives relevant to ventilation.

(c) Radiation control and monitoring. [Section 60.131(c)]

The reference to emergency operations is omitted because that subject is covered by § 60.131(b)(4). Editorial changes have been made here for the same reasons as were discussed in connection with that paragraph.

(d) Waste treatment. [Section 60.131(d)]

No change from proposed rule.

(e) Consideration of decommissioning. [Section 60.131(e)]

See *Decommissioning*, above. The term "decommissioning" has been retained in this context because surface facilities may continue to be used even after permanent closure. The requirement has been made more precise by specifying that the same standards apply here as to other activities licensed by NRC.

§ 60.133 Additional design criteria for the underground facility. [Section 60.132]

(a) General criteria for the underground facility. [Section 60.132(a)]

Proposed paragraphs (a)(1) and (a)(2) have been deleted because they were redundant.

The requirement that design features "enhance [containment and isolation of radionuclides] to the extent practicable at the site" has been changed to provide that the design shall "contribute" to such containment and isolation. As proposed, this provision could have been construed as imposing requirements substantially in excess of those needed to satisfy the performance objectives. This was not the intention. See also the discussion of *ALARA*, above.

The requirement to design the underground facility against the effects of disruptive events has been modified to apply to events occurring during the period of operations and to exclude water and gas intrusions to eliminate redundancy with other provisons of the rule. The requirement is also limited to consideration of *credible* disruptive events.

(b) Flexibility of design. [Section 60.132(b)]

The only change, in puncutation, is editorial.

(c) Retrieval of waste. [Section 60.132(d)]

Proposed paragraph (d)(2) has been deleted because it was redundant with proposed paragraph (d)(1) and was read to prohibit backfilling.

Proposed paragraph (d)(3) has been deleted because it is subsumed in the remaining text of the paragraph.

(d) Control of water and gas. [Section 60.132(g)]

Because of confusion about the meaning of the term "service water," the design requirement has been rephrased so as to refer more generally to "water or gas intrusion."

Additional proposed requirements have been deleted in response to comments regarding the level of detail in the rule. (See *Level of Detail*, above.) While each of the items that had been addressed will in all probablility be needed, the remaining general design criterion for control of water and gas is adequate to ensure that each of the features will be incorporated in the design where necessary.

(e) Underground openings. [Section 60.132(e)]

This paragraph has been rewritten in functional terms so as to require design so that operations in the underground facility "can be carried out safely and the retrievability option maintained."

The requirement that the design reduce the potential for deleterious rock movement or fracturing of rock has been retained. The identification of considerations that must be taken into account has been deleted as being more appropriate for treatment in regulatory guides. The Commission anticipates, however, that each of the factors that had been listed would in fact have been included in complying with this paragraph.

(f) Rock excavation. [Section 60.132(f)]

The proposed rule required design to "limit damage to and fracturing of rock." The extent to which damage should be "limited" was not stated. Moreover, for some geologic media and sites, the requirement could be interpreted to prescribe particular excavation methods, which was not the intent. The paragraph has been rephrased to indicate that the design must reduce the potential for creating a preferential pathway to the accessible environment.

(g) Underground facility ventilation. [Section 60.132(h)]

The term "subsurface facility" has been eliminated, conforming to the caption of the section. Paragraph (g)(1) now refers to control within and from the "underground facility."

Proposed paragraph (h)(2), which would have required design to permit continuous occupany of all excavated areas through permanent closure, was excessively restrictive. Ventilation will need to be maintained, however, where normal operations are being carried out, so as to satisfy paragraph (g)(1).

Proposed paragraph (h)(3) was deleted. It is adequately covered by paragraph (g)(1).

As in some other contexts, reference is now made to "accident conditions" instead of "emergency conditions" (see discussion of § 60.131(b)(5) above). The requirement for design to assure continued function is retained, but the means for accomplishing this is left to the designer. Redundant equipment and fail-safe control systems would continue to be employed where necessary and appropriate.

(h) Engineered barriers. [Section 60.132(i)]

The proposed rule, in paragraph (i), would have specified several design requirements for the engineered barriers, including backfill and barriers at shafts. While the Commission continues to expect that such feautures will ordinarily be incorporated into the design, it has concluded that its earlier approach would have been unduly restrictive. The Commission has therefore left only the general functional statement that the engineered barriers shall be designed to assist the geologic setting in meeting long-term performance objectives.

(i) Thermal loads. [Section 60.132(k)]

This provision retains the substance of proposed paragraph (k)(l). The reference to the "ability of the natural or engineered barriers to retard radionuclide migration" is deleted because it is already covered by requiring that the performance objectives be met.

Proposed (k)(2), identifying factors to be taken into account in the design of waste loading and waste spacings, has been omitted as containing excessive detail.

Other omitted provisions. [Sections 60.132(c), 60.132(j)]

Proposed § 60.132(c), dealing with the modular concept, was excessively restrictive. The Commission recognizes that to some degree the concurrent conduct of excavation with waste emplacement could "impair" waste emplacement or retrieval operations. Concurrent excavation and waste emplacement would be acceptable, provided that all other applicable requirements are satisfied. The provision for insulation of individual modules is not necessary, since paragraph (a)(3) requires that the design limit the effects of disruptive events and paragraph (g)(2) provides that the design assure continued function of ventilation systems under accident conditions. Section 60.131(a), including the design requirement to control the dispersal of radioactive contamination, is also relevant.

Proposed § 60.132(j) would have specified fail-safe designs in systems for handling, transporting, and emplacing wastes. This too was excessively restrictive. What protective measures are needed will be determined in the light of a range of factors, including the probability and consequences of mishaps and the costs of alternative means for dealing with them. Similarly, the final rule does not require that handling systems "minimize the potential for operator error;" specifications for such systems will depend upon an evaluation of the particular risks involved. Where protective measures are needed, particularly insofar as they relate to radiological consequences, the remaining design requirements suffice.

Section 60.134 Construction specifications for surface and subsurface facilities.

The proposed rule contained a section on construction specifications that was not appropriate, since (under § 60.31(a)(2)), the scope of Subpart E was limited to site and design criteria.

Although the section has therefore been deleted, this does not mean that construction procedures are not of vital significance. As stated in § 60.31(a)(1)(iv), the Commission will consider whether DOE has adequately described construction procedures which may affect the capability of the geologic repository to serve its intended function. Appropriate provisions will be included in a construction authorization, as provided in § 60.32.

Proposed § 60.134(c), dealing with construction records, has been retained, with minor modifications. It now appears as § 60.72, and is discussed in the analysis of that section.

Section 60.134 Design of seals for shafts and boreholes. [§ 60.133]

The proposed rule contained a number of provisions which commenters criticized as being unachievable, or at least incapable of being demonstrated. Specifically, there was objection to the requirements that shaft and seal design not create preferential pathways and that sealed shafts and boreholes inhibit radionuclide transport to, at the least, the same degree as the undisturbed rock. The Commission acknowledges that in some cases a pathway may be created that may be preferential in relation to the undisturbed rock. Whether or not this is acceptable will depend upon the characteristics of the rock in question, the quality of the seal under projected conditions, the age, nature, and location of the waste, and the design of the underground facility. The important thing is that the seals not become pathways that compromise the geologic repository's ability to meet the performance objectives for the period relating to isolation of the waste. This concept now appears as § 60.134(a).

Additionally, although the Commission's general approach has been to avoid ALARA-type concepts, it has in this instance specified that materials and placement methods for seals be selected to reduce to the extent practicable, the potential for creating a preferential pathway or the migration of radionuclides through existing pathways. This approach is based upon a concern that significant deficiencies in seal design could largely, or entirely, eliminate the contribution to waste isolation which is to be provided by the geologic setting. By insisting that seal design reduce preferential pathways to the extent practicable, the Commission ensures that the design will facilitate its arriving at licensing decisions.

Proposed § 60.133(b)(1) provided that shafts and boreholes be sealed as soon as possible after they have served their operational purpose. As in the other portions of the section, the objective was to address the question of long-term isolation. Early sealing can prevent deformations that might otherwise develop prior to permanent closure; such events could make it more difficult or impractical to achieve maximum integrity of the permanent seals when they are put into place. To the extent that this is an important concern, it too is covered under the text of the final § 60.134.

Design Criteria for the Waste Package

Section 60.135 Criteria for the waste package and its components.

A geologic repository operations area, by definition, is a facility that may be used for the disposal of high-level radioactive waste. The rule must therefore address matters related to HLW, including as appropriate requirements as to HLW waste form and waste package. Whether or not other radioactive materials are emplaced in the facility is speculative, and even if this should occur, the quantities, specific activity, half-lives and other relevant factors may be so variable as to make it impossible at this time to establish reasonable rules. The final rule accordingly expressly limits the applicability of the requirements of this section to high-level radioactive waste. Nonradioactive wastes are not addressed at all. The Commission defers for later consideration, should the occasion arise, an examination of the legal and technical questions that would be presented if the disposal of nonradioactive wastes in a geologic repository operations area were to be proposed.

Section 60.135(a) High-level waste package design in general.

This paragraph has been revised editorially. It is now limited to HLW packages, but is otherwise unchanged in substance from the proposed rule.

Section 60.135(b) Specific criteria for HLW package design. [§ 60.135(c)]

Two paragraphs relate to contents of the waste package—one dealing with explosive, pyrophoric, and chemically reactive materials and a second dealing with free liquids. Editorial changes have been made so as to provide parallel language. Insofar as the period of operations is concerned, this is done by adopting the proposed language that has applied to free liquids. Insofar as waste isolation is concerned, both paragraphs are related to the relevant performance objective, adapting for this purpose the proposed provisions on explosive, pyrophoric, and chemically reactive materials.

Also, as revised, the provision pertaining to explosive, pyrophoric, and

chemically reactive materials avoids the possible interpretation that insignificant quantities of such materials may not be incorporated in waste packages.

Other changes are merely editorial.

Section 60.135(c) Waste form criteria for HLW. [§ 60.135(b)].

The portion of this paragraph that deals with combustibles has been modified so as to specify that a fire involving waste packages containing combustibles will not affect the integrity of other waste packages, adversely affect any structures, systems or components important to safety, or compromise the ability of the underground facility to contribute to waste isolation. This parallels the corresponding changes in the waste package design criteria.

The reference to structures, systems, or components is modified by the defined term "important to safety" rather than the undefined adjective "safety-related."

Section 60.135(d) Design criteria for other radioactive wastes.

This paragraph is new. Its purpose is described in the introductory analysis for this section.

Performance Confirmation Requirements

Section 60.137 General requirements for performance confirmation.

Unchanged from proposed rule.

Subpart F—Performance Confirmation Program

Section 60.140 General requirements

The proposed rule would have specified that the performance confirmation program "ascertain" certain data. While achievement of that goal would be desirable; it is more accurate to state that the program is to "provide data which indicates, where practicable," whether conditions are within assumed limits and systems are functioning as intended.

The proposed requirement that the confirmation program be implemented so as not to "adversely affect" the natural and engineered barriers, § 60.140(d)(1), also needed to be qualified. The Commission's intention was not to prohibit useful tests that would have trivial impacts upon the repository's performance; instead, it wishes to assure that significant potentially adverse effects are taken into account in designing the performance confirmation program. The paragraph has been modified accordingly.

See also the amendment to § 60.74, which provides for the conduct of the performance confirmation program.

Section 60.141 Confirmation of geotechnical and design parameters.

Unchanged from proposed rule.

Ssection 60.142 Design testing.

Unchanged from proposed rule.

Section 60.143 Monitoring and testing waste packages.

The ambiguous term "repository" has been replaced by the defined terms "geologic repository operations area" or "underground facility," as appropriate. Other changes are editorial in nature.

Subpart G—Quality Assurance

Section 60.150 Scope.

This section has been revised to correspond to the counterpart provision of 10 CFR Part 50, Appendix B. Where the same term (here, "quality assurance") is employed in related contexts, it is generally desirable to use a common definition. For this reason, the Commission has declined to substitute "reasonable assurance" for "adequate confidence" as the measure of satisfactory performance.

Section 60.151 Applicability

The final rule defines "important to safety" in a manner related to the period of operations. Because quality assurance requirements must be applied with a view to long-term performance, Subpart G is also made applicable to those elements of the geologic repository that must function in a prescribed manner so as to satisfy the performance objectives for the period after permanent closure. The proposed rule's reference to "events that could cause an undue risk to the health and safety of the public" has been deleted because of the inclusion of the more definite standards that are referred to in the revised first sentence of the section.

Further, the Commission has adopted a suggestion to revise the list of activities to which Subpart G pertains so as to correspond more closely with the structure of the rule.

Section 60.152 Implementation.

Unchanged from proposed rule.

[Section 60.153 Quality assurance for performance confirmation.]

This section of the proposed rule has been deleted because performance confirmation is now made subject, by § 60.151(b), to explicit requirement for the conduct of performance confirmation.

Subpart H—Training and Certification of Personnel

Provisions for training and Certification of Personnel are unchanged in substance from the proposed rule. The rule has been clarified by replacing the undefined term "operations important to safety" with the phrase "operations of systems and components important to safety." Other changes are merely editorial.

Subpart I—Emergency Planning Criteria

Section 60.31(a) provides that one of the considerations bearing upon the issuance of a construction authorization is whether DOE's emergency plan complies with the criteria contained in Subpart I. The proposed technical criteria were silent with respect to Subpart I, and the contents of that subpart here continue to be reserved.

Environmental Impact

Pursuant to Section 121(c) of the Nuclear Waste Policy Act of 1982, the promulgation of these criteria shall not require the preparation of an environmental impact statement under Section 102(2)(C) of the National Environmental Policy Act of 1969 or any environmental review under subpargraph (E) or (F) of Section 102(2) of such Act.

Paperwork Reduction Act

This rule contains no new or amended recordkeeping, reporting, or application requirement, or any other type of information collection requirement, subject to the Paperwork Reduction Act (Pub. L. 96–511).

Regulatory Flexibility Act Certification

As required by the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule, if adopted, will not have a significant economic impact upon a substantial number of small entities. The only entity subject to regulation under this rule is the U.S. Department of Energy.

List of Subjects in 10 CFR Part 60

High-level waste, Nuclear power plants and reactors, Nuclear materials, Penalty, Reporting requirements, Waste treatment and disposal.

Issuance

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the Nuclear Waste Policy Act of 1982, and 5 U.S.C. 553, the Nuclear Regulatory Commission is adopting the following amendments to 10 CFR Part 60.

50 FR 29641
Published 7/22/85
Effective 7/22/85

10 CFR Part 60

Disposal of High-Level Radioactive Wastes in Geologic Repositories

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is amending its regulations for the disposal of high-level radioactive wastes in geologic repositories. These amendments will ensure that the rule contains specific criteria for the disposal of high-level radioactive wastes within the unsaturated zone. This action is necessary to assure that NRC regulations address considerations relevant to all geologic repositories, whether sited in the saturated or unsaturated zone.

EFFECTIVE DATE: July 22, 1985.

FOR FURTHER INFORMATION CONTACT: Dr. Frank A. Costanzi, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 427–4362.

SUPPLEMENTARY INFORMATION:

Background

On February 25, 1981, the Nuclear Regulatory Commission (NRC) promulgated a rule that established procedures for licensing the disposal of high-level radioactive wastes (HLW) in geologic repositories (46 FR 13971). NRC promulgated technical criteria to be used in the evaluation of license applications under those procedures on June 21, 1983 (48 FR 28194). Although these technical criteria are generally appropriate to disposal in both the saturated and unsaturated hydrogeologic zones, some further distinctions need to be made for disposal in the unsaturated zone. Consequently, the Commission expressed its intent to issue specific technical criteria for the unsaturated zone after promulgating the final technical criteria so as to afford further opportunity for public comment on this issue. Proposed amendments to these technical criteria to include HLW disposal within either the saturated or unsaturated zone were published for comment on February 16, 1984. These proposed amendments contained provisions for new definitions and favorable and potentially adverse siting criteria. In addition to the proposed amendments, the Commission specifically requested public input on two questions related to groundwater travel time calculations within the unsaturated zone. In conjunction with the proposed amendments, the Commission published for public comment draft NUREG–1046 [1] which contained a discussion of the principal technical issues considered by the Commission during the development of the proposed amendments.

Summary of Comments and Changes

A total of fourteen groups and individuals commented on the proposed amendments and draft NUREG–1046. There was general acceptance of the Commission's view that disposal of HLW within the unsaturated zone is a viable alternative to disposal within the saturated zone. The commenters addressed the Commission's specific questions on groundwater travel time within the unsaturated zone and provided additional comments suggesting word changes to improve the technical accuracy and clarity of the proposed amendments. The principal comments received on the questions and proposed amendments, and the Commission's corresponding responses, are discussed below. Changes and clarifications made in the rule as a result of the Commission's consideration of these comments are also explained in this section. Copies of the individual comment letters and a detailed analysis of these letters by the NRC staff are available in the NRC Public Document Room, 1717 H Street NW., Washington, DC 20555.

(a) Groundwater Travel Time Calculations

Technical criteria governing the post-emplacement performance of the particular barriers of the and geologic repository system (i.e. engineered barriers and geologic setting) are set forth at § 60.113 (48 FR 28224; June 21, 1983). The post-closure performance criterion for the geologic setting set forth at § 60.113(a)(2) requires that the geologic repository be located so that pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment be at least 1,000 years or such other travel time as may be approved or specified by the Commission. Although no change was made explicitly to the provisions of § 60.113(a)(2) in the proposed amendments for the unsaturated zone, the proposed definition of the term "groundwater" set forth at § 60.2 would clearly make the scope of § 60.113(a)(2) applicable to geologic repositories within either the saturated or unsaturated zone. Similarly, the proposed amendment to the Siting Criteria (§ 60.122(b)(7)) would have the effect of making pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment which substantially exceeds 1,000 years a favorable condition for HLW disposal within either hydrogeologic zone.

In the statement of considerations which accompanied the proposed amendments, the Commission discussed possible limitations of the pre-waste-emplacement groundwater travel time performance objective of § 60.113 when applied to the unsaturated zone. However, the Commission stated that if DOE could demonstrate with reasonable assurance that travel time for groundwater movement through the unsaturated zone can be quantified, then DOE should be allowed to include such travel time when demonstrating compliance with § 60.113(a)(2). The Commission also acknowledged that it may be more appropriate to specify another parameter upon which performance may be evaluated for a geologic setting in the unsaturated zone, or to use the approach set forth in § 60 113(b) which provides the Commission with the flexibility to specify variations in performance objectives on a case-by-case basis, as long as the overall system performance objective is satisfied. Further, the Commission observed that calculations of pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel through the unsaturated zone could involve considerable uncertainty, and thus requested public comment on questions related to the applicability of the existing 10 CFR Part 60 performance objective for the geologic setting to sites located in unsaturated geologic media. In response to this solicitation of public comment, seven of the fourteen commenters specifically addressed the questions on groundwater travel time calculations. These questions and the views expressed by the seven commenters are reviewed below.

The notice of proposed rulemaking first requested comment on how groundwater travel time in the

[1] Draft NUREG–1046—*Disposal of High-Level Radioactive Wastes in the Unsaturated Zone: Technical Considerations* is currently being revised to reflect changes made in the amendments to 10 CFR Part 60 related to HLW disposal within the unsaturated zone. When this revision is completed, a copy of NUREG–1046 will be placed in the Commission's Public Document Room. Upon publication, copies of NUREG–1046 may be purchased by calling (301) 492–9530 or by writing to the Publication Services Section, Division of Technical Information and Document Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555, or purchased from the National Technical Information Service, Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

unsaturated zone could be determined with reasonable assurance. Comments received in response to this question were divided nearly equally into two categories. The first group of commenters argued that presently it would be difficult to calculate groundwater travel time in the unsaturated zone with reasonable assurance because of the lack of generally acceptable methodology and the limited scope of research efforts currently devoted to this question. A second group of commenters, comprised predominantly of representatives of other Federal agencies, endorsed the opinion that groundwater travel time could be determined with reasonable assurance. One of these commenters indicated that groundwater travel time calculations could be made by measuring the amount of natural tritium in the groundwater samples from a vertical profile in unsaturated geologic formations. Two other commenters stated that groundwater travel time could be derived from groundwater flux using measurements of ambient water content, degree of saturation, matric potential and hydraulic conductivity to determine moisture-characteristic curves relating these parameters to one another. These curves can be developed so as to predict constitutive relationships over a wide range of conditions. From these relationships and flux determinations these commenters argued that groundwater velocities and subsequently groundwater travel times could then be estimated. One of these two commenters further stated that reasonable assurance may be gained in estimating groundwater travel time using results of laboratory testing, state-of-the-art direct determinations in the field or laboratory, and bounding estimates developed by indirect methods, while both commenters indicated that reasonable assurance may also be gained by incorporating uncertainty analyses into predictive models.

The Commission recognizes that prior to the commencement of HLW disposal studies most groundwater investigations in unsaturated geologic media were generally limited in scope to issues related to near-surface,highly porous soils and unconsolidated rock types. Efforts to predict groundwater movement through potentially suitable geologic repository sites within the unsaturated zone often entail the application of hydrogeologic theories, models and methodologies governing near-surface, porous media to much deeper hydrogeologic environments and different rock properties than they originally were designed for. The Commission realizes that given the current state of groundwater investigations there may be difficulties associated with groundwater travel time calculations in both the saturated and unsaturated zones, as one commenter observed. However, the Commission concludes that groundwater travel time calculations can be determined in the unsaturated zone, though not necessarily with great precision, provided that the proper level of site characterization analysis is conducted. Following a detailed study of the comments received on this question, the Commission believes it is feasible for DOE to demonstrate compliance with the groundwater travel time provision, using existing field and laboratory experiments. Further, as several commenters indicated, a substantial effort is currently underway to develop new methodologies and to improve existing techniques for measuring the hydrogeologic parameters and flow properties that will provide the necessary imput to groundwater travel time calculations. For example, it was noted that in-situ monitoring techniques, including tracer tests, are undergoing development and may broaden the range of rock types and conditions for which it is feasible to estimate groundwater velocity and, hence, groundwater travel time.

The second part of the first question on which the Commission sought comment centered on whether or not the existing groundwater travel time performance objective in § 60.113(a)(2) should be limited to groundwater movement within the saturated zone. The general consensus among commenters on this issue was that there is no reason to strictly limit the groundwater travel time performance objective to water movement in the saturated zone. Following a review of the discussions presented in these comments the Commission has determined that the groundwater travel time provision (§ 60.113(a)(2)) can be applied to a geologic setting located in either the saturated or unsaturated zone. The Commission could discern no obvious advantage for developing a parallel provision for the unsaturated zone as one commenter suggested. With respect to another commenter's concern that if the Commission decided to retain the groundwater travel time provision, travel time along any segment of the flow path, including the unsaturated zone, should be creditable, provided that reasonable assurance has been demonstrated, the Commission has concluded further that the definition of the term "groundwater" set forth at § 60.2 will allow travel time along subsurface flowpaths to be considered regardless of the hydrogeologic regime through which the water is moving. As defined in § 60.2, "groundwater" means all water which occurs below the land surface. The Commission believes that the concerns of one commenter that it would be inappropriate to limit groundwater travel time to the saturated zone because such an action would not accurately indicate the actual radionuclide transport time from the original location of the waste to the accessible environment will also be largely accommodated by the definition of the term "groundwater" in § 60.2. With respect to the view expressed that the approach set forth in § 60.113(b) may be particularly appropriate in the case of HLW disposal in the unsaturated zone, it should be noted that in those instances when groundwater travel time calculations cannot be demonstrated with reasonable assurance, the Commission may prefer to specify or approve alternative performance objectives pursuant to § 60.113(b).

In its second question related to groundwater travel time the Commission sought public comment on whether groundwater travel time represented an appropriate measure of performance for a site within the unsaturated zone, or whether an alternative performance objective for the geologic setting would be more appropriate. The views expressed by the commenters were nearly equally divided on this issue. Some of the commenters asserted that, although not ideal, the groundwater travel time provision may, under certain circumstances, represent an appropriate measure of performance for a geologic setting in the unsaturated zone. Other commenters argued that groundwater travel time was not an appropriate performance objective for HLW disposal within the unsaturated zone and suggested several alternative performance objectives, as discussed below.

With respect to alternative performance requirements, one commenter considered it unacceptable to establish an alternative performance measure for unsaturated geologic media while using a different measure for a saturated salt site. The Commission anticipates that the decision to apply the groundwater travel time provision to all geologic settings regardless of the hydrogeologic zone in which the site is located should alleviate this commenter's concern. Another commenter stated that although groundwater travel time substantially exceeding 1,000 years is a favorable condition, it is not appropriate as a totally definitive performance objective for disposal in either the saturated or unsaturated zone. However, in view of § 60.113(b), the groundwater travel time performance objective is not such a "totally definitive" objective. The same commenter considered release criteria

as the absolute measure of total performance and further argued that realistic estimates of release criteria for the unsaturated zone might not be possible until observations are actually made in shafts and drifts. In response, the Commission would note that the site characterization program would include such observations. One commenter indicated that if NRC chose to retain the groundwater travel time performance objective that this provision should only be applied if the travel time calculations include combined travel times in the unsaturated and saturated zones so as to better approximate radionuclide transport. The Commission considers the concerns of this commenter to be accommodated by the definition of the term "groundwater" adopted in the final amendments.

Most commenters who argued against the application of the groundwater travel time performance objective to unsaturated geologic media generally suggested alternatives based either on the hydrogeologic concept of flux or upon the case-by-case approach of § 60.113(b).

As derived from U.S. Geological Survey Water Supply Paper–1988 the term groundwater "flux" can be defined as the rate of discharge of groundwater per unit area of porous or fractured geologic media measured at right angles to the direction of flow. In comparison, the term "groundwater travel time" used in 10 CFR Part 60 can be interpreted as the length of time required for a unit volume of groundwater to travel between two locations. Alternatives suggested by the commenters which were based upon the concept of flux included a maximum groundwater flux requirement and a dual "either/or" criterion which would allow the applicant the option of demonstrating compliance with either a minimum groundwater travel time requirement or a maximum groundwater flux requirement. After considering the possibility of an alternative performance objective based upon the maximum groundwater flux, the Commission has decided to retain the groundwater travel time requirement for geologic settings regardless of the hydrogeologic zone in which they are located. This decision was based on the Commission's belief that the groundwater travel time requirement represents an independent measure of the overall hydrogeologic system performance which may encompass a variety of hydrogeologic parameters including groundwater flux. However, the Commission expects that groundwater flux will be an important factor in the technical evaluation of radionuclide releases in the unsaturated zone, as well as in the saturated zone.

The Commission does not consider it necessary to specify a dual "either/or" groundwater criterion suggested by one commenter since under the provisions of § 60.113(b), the Commission already has the flexibility to approve or specify some other radionuclide release rate, designed containment period, or pre-waste-emplacement groundwater travel time on a case-by-case basis. Futher, the Commission anticipates that areally integrated or averaged groundwater flow velocity referred to by this same commenter will be addressed in the evaluation of uncertainties surrounding the groundwater travel time calculations.

In addition, to a performance criterion based upon groundwater flux, other alternative performance criteria were discussed by commenters. DOE, in its original comment letter on the proposed amendments expressed general support for a performance criterion based upon groundwater flux, but in an addendum to this letter concluded that it would be impractical to define a performance objective for the geologic setting based on flux through a geologic repository located in the unsaturated zone. Instead, DOE took the position that an alternative performance objective developed upon the concept of a minimum time for groundwater travel to the accessible environment based on four separate physical events would be more appropriate for the unsaturated zone. The four physical events contained in the suggested DOE alternative performance objective are: (1) The creation of a drying zone around the emplaced wastes, (2) the subsequent return of moisture to the rock surrounding the waste canisters, (3) the travel time through the unsaturated zone and finally, (4) the travel time to the accessible environment by groundwater movement through the saturated zone.

The manner in which these or possibly other events may occur within the geologic repository system will depend upon the interactions of a number of site- and design-specific parameters such as the thermomechanical and hydrogeologic properties of the host rock, thermal loading of the underground facility and waste package design. However, as noted at 48 FR 28203, the Commission believes that it is important to consider both natural and engineered barriers individually and has structured the technical criteria of 10 CFR Part 60 in a way that requires that the natural and engineered barriers each make a definite contribution to the overall system performance objective for the geologic repository. To that end the Commission considers it important to maintain a standard of performance for the geologic setting that is a measure of the quality of the natural barriers and is independent of any interaction between these natural barriers and the engineered barriers.

The existing pre-waste-emplacement groundwater travel time provision (§ 60.113(a)(2)) is such a performance standard since it is characteristic of the area outside of the disturbed zone created by underground facility construction and waste emplacement operations. This parameter is not dependent upon the effects of waste emplacement and is intended to provide assurance of isolation beyond the first 1000 years. The Commission prefers the existing groundwater travel time provision, which is part of its multiple barrier approach, to the alternative performance objective suggested by DOE since the latter does not offer a measure of performance for the geologic setting that can be evaluated independently of design and engineering factors. Further, the physical parameters needed to evaluate pre-waste-emplacement conditions of the geologic setting can be accurately measured with direct and indirect field methodology.

The DOE suggestion would necessitate that estimates of long-term performance of the geologic setting under post-waste-emplacement conditions be used in the Commission's deliberations on whether the groundwater travel time performance objective is met. The uncertainties associated with such estimates can be affected by a number of factors, including the age and nature of the waste and the design of the underground facility. Evaluations of the performance of the geologic setting under post-waste-emplacement condition must also take into account predictions of future changes in the thermomechanical, geochemical and hydrogeologic properties of the geologic setting through time as a result of the creation of a non-isothermal environment due to waste emplacement. The Commission's view is that the present emphasis on pre-waste-emplacement conditions will provide a higher degree of confidence in the continued isolation capabilities of the natural barriers of the geologic setting over the long term.

The view was also expressed by other commenters that the development of a new alternative performance objective to existing § 60.113(a)(2) may not be necessary since the Commission's approach set forth at § 60.113(b) might be a more appropriate means of specifying alternatives to the groundwater travel time criterion. The Commission notes that it is essentially following this approach in its decision to

retain the existing provisions of § 60.113(a)(2) and § 60.113(b).

Following a review of the various alternative performance objectives suggested by the commenters, the Commission considers groundwater travel time to represent a more appropriate parameter upon which the performance of the geologic setting can be evaluated than any of the suggested alternatives because a prescribed groundwater travel time can be generically applied and will provide a conservative estimate of a minimum radionuclide release time to the accessible environment. It should be noted, however, that the Commission still retains the option of applying the provisions of § 60.113(b) instead of § 60.113(a)(2) to a particular geologic setting when such an action is deemed appropriate.

(b) Definition of Groundwater

Three commenters addressed the Commission's proposed definition of the term "groundwater" as meaning "all water below the Earth's surface". Two of these commenters, citing possible confusion among the public and scientific community stated that the Commission should not define "groundwater" in this manner, but rather should limit the use of the term to water within the saturated zone. In contrast, one commenter commended NRC on this definition, but noted that it may not be consistent with the definition of the term included in the proposed EPA environmental standards—40 CFR Part 191. In its proposed rule EPA defined "groundwater" as "water below the land surface in a zone of saturation" (47 FR 58205, December 29, 1982). While the Commission recognizes that limiting the use of the term "groundwater" to water within the saturated zone may currently be a more widely accepted practice, the Commission also notes that numerous members of the scientific community routinely use the term groundwater in the same context as the Commission proposed.

The Commission has carefully reviewed the arguments presented by the commenters on this issue and has decided to retain the definition of groundwater with one minor change—the phrase "Earth's surface" has been replaced by "land surface". This change was made for the sake of clarity and internal consistency with wording in the definition of the term "unsaturated zone". The Commission's decision was based on the fact that, at present, no unique definition of the term "groundwater" appears to be universally accepted in the technical community. Therefore, the Commission has not actually redefined the term "groundwater" as one commenter suggested but rather has adopted one of the commonly used definitions of the term that is most consistent with the Commission's intent concerning the provisions related to gronndwater throughout the Part 60 regulation. With respect to the differences between the definition of the term "groundwater" adopted by the Commission and that proposed by EPA, the Commission notes that it does not consider the two definitions to be inconsistent since the scope of the definition adopted in § 60.2 will encompass water within the zone of saturation as well as water within the unsaturated zone. As noted above, the Commission considers it necessary to adopt a broader definition of the term "groundwater" in order to maintain consistency with previous Commission usage of this term and to effectively apply the provisions of 10 CFR Part 60 to the regulation of HLW disposal within unsaturated as well as saturated geologic media. Further, since EPA has not yet promulgated its final environmental standards, the Commission cannot anticipate whether or how "groundwater" will actually be defined in the final EPA regulation.

(c) Definition of the "Unsaturated Zone"

The Commission's proposed definition was derived from U.S. Geological Survey (USGS) Water Supply Paper 1988. Two commenters noted that the phrase "deepest water table" introduced confusion into the definition of the term "unsaturated zone" (§ 60.2). The Commission had inferred that the phrase "deepest water table" as used by the USGS referred to the regional water table and hence adopted this same phraseology in the definition of the term "unsaturated zone" set forth in the proposed amendments to 10 CFR Part 60. However, in light of confusion expressed by commenters which may be due partially to the incorrect inference by some that the phrase "deepest water table" referred to local rather than regional water tables, the definition of term "unsaturated zone" has been modified. To clarify the Commission's original intent, the phrase "deepest water table" has been replaced by "regional water table" in the final amendments. (A conforming change has also been made to the definition of the term "saturated zone"). Additionally, the phrase "water in this zone is under less than atmospheric pressure" has been rewritten as "fluid pressure in this zone is less than atmospheric pressure" for the sake of technical clarity. The Commission has attempted to maintain internal consistency with the definitions of hydrogeologic terms presented in USGS Water Supply Paper 1988 wherever practicable and for this reason has not adopted any of the alternative definitions of the term "unsaturated zone" suggested by the commenters.

(d) Favorable Siting Conditions

Section 60.122(b)(2). The term "low hydraulic potential" has been replaced with "low hydraulic gradient" in § 60.122(b)(2)(iii) as suggested by one commenter for the sake of technical accuracy.

Section § 60.122(b)(7). In addition to comments received in response to the Commission's specific request for input on its questions related to groundwater travel time calculations in the unsaturated zone, the subject of groundwater travel time was also addressed by two commenters on proposed § 60.122(b)(7). The issues raised by these two commenters merit discussion here although they have resulted in no change to the rule.

The provisions of § 60.122(b)(7) have the effect of identifying pre-waste-emplacement groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment that substantially exceeds 1,000 years as a favorable siting criteria for both the saturated and unsaturated zones. Previously these provisions (formerly designated as § 60.122(b)(2)(iv)) applied only to sites within the saturated zone.

One commenter on proposed § 60.122(b)(7) opposed the application of this provision to the unsaturated zone on the grounds that the determination of groundwater travel time in the unsaturated zone may not be necessary nor always be possible. Under such circumstances, this commenter argued, inability to demonstrate that groundwater travel time substantially exceeds 1,000 years should not amount to the absence of a favorable condition. The issue of groundwater travel time in the unsaturated zone has already been discussed in detail in the above section on *Groundwater Travel Time Calculations* and will not be repeated here. With respect to the second part of this comment the Commission reiterates its position set forth in the Supplementary Information to the final 10 CFR Part 60 technical criteria (48 FR 28201) that a site is not disqualified as a result of the absence of a favorable siting condition.

A second commenter on § 60.122(b)(7) expressed the view that for a HLW repository within the unsaturated zone, minimizing leachate flux would appear

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to be at least as important as maximizing groundwater travel time. To that end, this commenter fleet that it might be more appropriate to specify as a favorable siting condition a dual "either/or" criterion such that groundwater travel time is greater than 1,000 years or groundwater flux through the host rock at a proposed site is less than some average rate. This rate, it was argued, could be based on nuclide solubility, leach rate criteria, and population exposure criteria. The commenter stated that whichever criterion was ultimately selected it should be based upon an areally integrated or averaged calculation, over an area on the order of the cross-sectional area of the repository normal to the direction of expected flux regardless of hydrogeologic zone to help reduce controversy concerning how the "fastest pathway" can be determined. For a discussion of the concept of applying a dual criterion of either groundwater travel time or groundwater flux see the above section entitled *Groundwater Travel Time Calculations*.

Minor corrections have been made to the provisions of § 60.122(b)(8) for the sake of clarity and technical accuracy as a result of the comments received. The phrase "and nearly constant" has been deleted from § 60.122(b)(8)(i) and a typographical error in the word "overlying" has been corrected.

(e) Potentially Adverse Conditions

Section 60.122(c)(9). This provision of the final technical criteria identified groundwater conditions in the host rock that are not reducing as a potentially adverse condition for the saturated zone. One commenter on the proposed amendments stated that a parallel provision should be provided for the unsaturated zone. The Commission considers this argument to have merit and has modified the final amendments accordingly. Rather than create an additional provision, the Commission has deleted the qualifying phrase "for disposal in the saturated zone" from existing § 60.122(c)(9) to ensure that this provision will be applicable equally to groundwater conditions in the saturated and unsaturated zones.

Section 60.122(c)(23). Minor editorial changes have been made as suggested by one commenter, for the sake of clarity.

Section 60.122(c)(24). During the development of the proposed amendments (47 FR 5935, February 16, 1984) the Commission's staff identified vapor transport of contaminants as a potential concern associated with HLW disposal in the unsaturated zone. The Commission noted that in unsaturated geologic media, water is transported in both liquid and vapor phases. The relative contribution of tranport via both these phases and their direction of movement with respect to a geologic repository was deemed to directly influence the containment of contaminants. Vapor transport, particularly when a thermal gradient is imposed, may provide a possible mechanism for radionuclide migration from a geologic repository in unsaturated geologic media. This issue was discussed at length by the Commission in the proposed amendments and in draft NUREG-1046. The comments received on the discussion of vapor transport and on the wording of the proposed amendment § 60.122(c)(24) indicated a need for the Commission to clarify its intent with respect to vapor transport.

The issue of vapor transport of contaminants is a relatively new issue that has grown out of scientific investigations of the feasibility of HLW disposal in unsaturated geologic media. Since most scientific studies related to HLW disposal within the unsaturated zone have been initiated very recently, many of the associated issues have not as yet been examined in any great detail. The Commission recognized that vapor formation may not necessarily constitute an adverse condition for a particular geologic repository site, but, given the fact that vapor transport could provide a mechanism for radionuclide transport within the unsaturated zone, it wanted the opportunity to evaluate whether or not vapor transport could adversely affect a geologic repository system. To that end the Commission identified the potential for vapor transport of radionuclides from an underground facility located in the unsaturated zone to the accessible environment as a potentially adverse condition in the proposed amendments (§ 60.122(c)(24)). The Commission has not reached any conclusions on vapor transport, as one commenter incorrectly inferred, but rather is currently sponsoring research on vapor transport in unsaturated fractured rock in an effort to better understand this subject.

Some confusion was expressed by the commenters with respect to the Commission's use of the term "vapor transport". In particular, one commenter stated that § 60.122(c)(24), as written, was ambiguous and meaningless. The term "vapor transport" as used in the proposed amendments referred to both water vapor and the gaseous state of some constituent contaminants. A second commenter on this issue suggested that the Commission add quantitative clarifications to this provision since the proposed wording allowed no potential vapor transport of radionuclides by molecular diffusion (i.e., transport at a microscopic level due to concentration gradients) or convective transport (i.e., transport due to temperature or density gradients). The same commenter noted that while the flux values associated with these two transport processes might be miniscule, they would not be zero at any unsaturated site. The Commission does not consider it appropriate to add quantitative clarifications to § 60.122(c)(24) because the movement of radionuclides in the gaseous state is, to a large extent, dependent on site- and design-specific parameters. The Commission considers the movement of radionuclides in the gaseous state may be a potentially important site- and design-related process and will retain the opportunity to evaluate whether or not such a process will adversely affect the geologic repository system. However, to alleviate the confusion surrounding proposed § 60.122(c)(24), the wording of this provision has been extensively modified in the final amendments. Reference to "vapor transport" has been deleted, and this provision now solely addresses the potential for the movement of radionuclides in a gaseous state through air-filled pore spaces of an unsaturated geologic medium to the accessible environment as a potentially adverse condition. The Commission believes the revised wording will more accurately convey its original intent and should remove any ambiguity associated with the previous wording, such as one commenter's query of where the vapor transport is occurring and when it is important.

The Commission agrees with the commenter who indicated that vapor transport may also occur in geologic repositories sited in the saturated zone until resaturation occurs. A temporary, localized, unsaturated region could form around an underground facility within the saturated zone as a result of activities related to construction and operation of a geologic repository (e.g. dewatering of shafts and drifts). To date, the issue of vapor transport has not been raised for a geologic repository within the saturated zone primarily because such a phenomenon would be expected to be encompassed within a much larger saturated region, that is, vapor transport might only be expected to occur in that portion of the host rock where the voids are not completely filled or refilled with groundwater. Further, it is anticipated that the time required for waste package integrity

(300–1,000 yrs) will generally exceed the post-closure time required for resaturation of a geologic repository within the saturated zone (assumed by the NRC staff to occur within a few hundred years following permanent closure). Therefore, the Commission does not consider it necessary at this time to identify vapor transport as a potentially adverse condition for HLW disposal within the saturated zone. However, if future research in the area of vapor transport challenges these current assumptions, the Commission may decide to broaden the provisions of § 60.122(c)(24) to include both the saturated and unsaturated zones.

(f) Design Criteria

Changes were made to provisions of the final technical criteria related to design criteria. The provisions of § 60.133(f) have been modified to more closely identify the concept of a potential for creating a preferential pathway for groundwater to contact the waste packages. This change was prompted by a commenter's observation that as originally worded, this provision might not be internally consistent with new § 60.122(b)(8)(iv) which identifies a host rock that provides for free drainage as a favorable hydrogeologic condition in the unsaturated zone. Similar word changes have been made to the provisions of § 60.134(b) for consistency with § 60.122(b)(8)(iv). Additionally, the phrase "radioactive waste migration" has been changed to "radionuclide migration" in both § 60.133(f) and § 60.134(b) for the sake of technical accuracy. The changes should ensure that these provisions will be equally applicable to geologic repositories within either the saturated or unsaturated zone, and will more accurately convey the Commission's original intent.

Environmental Impact

Pursuant to Section 121(c) of the Nuclear Waste Policy Act of 1982, the promulgation of these criteria does not require the preparation of an environmental impact statement under Section 102(2)(C) of the National Environmental Policy Act of 1969 or any environmental review under subparagraph (E) or (F) of Section 102(2) of such Act.

Paperwork Reduction Act Statement

The final rule contains no new or amended recordkeeping, reporting or application requirement, or any other type of information collection requirement subject to the Paperwork Reduction Act (Pub. L. 96–511).

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)), the Commission certifies that this rule will not have a significant economic impact on a substantial number of small entities. The only entity subject to regulation under this rule is the U.S. Department of Energy, which is not a small entity as defined in the Regulatory Flexibility Act.

List of Subjects in 10 CFR Part 60

High-level waste, Nuclear power plants and reactors, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Waste treatment and disposal.

Issuance

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the Nuclear Waste Policy Act of 1982, and 5 U.S.C. 553, the Nuclear Regulatory Commission is adopting the following amendments to 10 CFR Part 60.

PART 61

LICENSING REQUIREMENTS FOR LAND DISPOSAL OF RADIOACTIVE WASTE

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Authority: Secs. 53, 57, 62, 63, 65, 81, 161, 182, 183, 68 Stat. 930, 932, 933, 935, 948, 953, 954, as amended (42 U.S.C. 2073, 2077, 2092, 2093, 2095, 2111, 2201, 2232, 2233); Secs. 202, 206, 88 Stat. 1244, 1246, (42 U.S.C. 5842, 5846); Secs. 10 and 14, Pub. L. 95-601, 92 Stat. 2951 (42 U.S.C. 2021a and 5851).

For the purposes of Sec. 223, 68 Stat. 958, as amended, (42 U.S.C. 2273): Tables 1 and 2, §§61.3, 61.24, 61.25, 61.27(a), 61.41 through 61.43, 61.52, 61.53, 61.55, 61.56, and 61.61 through 61.63 issued under Sec. 161b, 68 Stat. 948 as amended (42 U.S.C. 2201(b)); §§ 61.10 through 61.16, 61.24, and 61.80 issued under Sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

61.1(a)

PART 61 • LICENSING REQUIREMENTS FOR LAND DISPOSAL OF RADIOACTIVE WASTE

Subpart A—General Provisions

§ 61.1 Purpose and scope.

(a) The regulations in this part establish, for land disposal of radioactive waste, the procedures, criteria, and terms and conditions upon which the Commission issues licenses for the disposal of radioactive wastes containing byproduct, source and special nuclear material received from other persons. Disposal of waste by an individual licensee is set forth in Part 20 of this chapter. Applicability of the requirements in this Part to Commission licenses for waste disposal facilities in effect on the effective date of this rule will be determined on a case-by-case basis and implemented through terms and conditions of the license or by orders issued by the Commission.

(b) Except as provided in Part 150 of this chapter, which addresses assumption of certain regulatory authority by Agreement States, and § 61.6 "Exemptions," the regulations in this part apply to all persons in the United States. The regulations in this part do not apply to (1) disposal of high-level waste as provided for in Part 60 of this chapter; (2) disposal of uranium or thorium tailings or wastes (byproduct material as defined in § 40.4(a–1)) as provided for in Part 40 of this chapter in quantities greater than 10,000 kilograms and containing more than five (5) millicuries of radium-226; or (3) disposal of licensed material as provided for in Part 20 of this chapter.

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§ 61.2 Definitions.

As used in this part:

"Active maintenance" means any significant remedial activity needed during the period of institutional control to maintain a reasonable assurance that the performance objectives in §§ 61.41 and 61.42 are met. Such active maintenance includes ongoing activities such as the pumping and treatment of water from a disposal unit or one-time measures such as replacement of a disposal unit cover. Active maintenance does not include custodial activities such as repair of fencing, repair or replacement of monitoring equipment, revegetation, minor additions to soil cover, minor repair of disposal unit covers, and general disposal site upkeep such as mowing grass.

"Buffer zone" is a portion of the disposal site that is controlled by the licensee and that lies under the disposal units and between the disposal units and the boundary of the site.

"Chelating agent" means amine polycarboxylic acids (e.g., EDTA, DTPA), hydroxy-carboxylic acids, and ploycarboxylic acids (e.g., citric acid, carbolic acid, and glucinic acid).

"Commencement of construction" means any clearing of land, excavation, or other substantial action that would adversely affect the environment of a land disposal facility. The term does not mean disposal site exploration, necessary roads for disposal site exploration, borings to determine foundation conditions, or other preconstruction monitoring or testing to establish background information related to the suitability of the disposal site or the protection of environmental values.

"Commission" means the Nuclear Regulatory Commission or its duly authorized representatives.

"Custodial Agency" means an agency of the government designated to act on behalf of the government owner of the disposal site.

"Director" means the Director, Office of Nuclear Material Safety and Safeguards, U. S. Nuclear Regulatory Commission.

"Disposal" means the isolation of radioactive wastes from the biosphere inhabited by man and containing his food chains by emplacement in a land disposal facility.

"Disposal site" means that portion of a land disposal facility which is used for disposal of waste. It consists of disposal units and a buffer zone.

"Disposal unit" means a discrete portion of the disposal site into which waste is placed for disposal. For near surface disposal the unit is usually a trench.

"Engineered barrier" means a man-made structure or device that is intended to improve the land disposal facility's ability to meet the performance objectives in Subpart C.

"Explosive material" means any chemical compound, mixture, or device, which produces a substantial instantaneous release of gas and heat spontaneously or by contact with sparks or flame.

"Government agency" means any executive department, commission, independent establishment, or corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States; or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the government.

"Hazardous waste" means those wastes designated as hazardous by Environmental Protection Agency regulations in 40 CFR Part 261.

"Hydrogeologic unit" means any soil or rock unit or zone which by virtue of its porosity or permeability, or lack thereof, has a distinct influence on the storage or movement of groundwater.

"Inadvertent intruder" means a person who might occupy the disposal site after closure and engage in normal activities, such as agriculture, dwelling construction, or other pursuits in which the person might be unknowingly exposed to radiation from the waste.

"Indian Tribe" means an Indian tribe as defined in the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450).

"Intruder barrier" means a sufficient depth of cover over the waste that inhibits contact with waste and helps to ensure that radiation exposures to an inadvertent intruder will meet the performance objectives set forth in this part, or engineered structures that provides equivalent protection to the inadvertent intruder.

"Land disposal facility" means the land, buildings, and equipment which is intended to be used for the disposal of radioactive wastes into the subsurface of the land. For purposes of this chapter, a geologic repository as defined in Part 60 is not considered a land disposal facility.

"License" means a license issued under the regulations in Part 61 of this chapter. "Licensee" means the holder of such a license.

"Monitoring" means observing and making measurements to provide data to evaluate the performance and characteristics of the disposal site.

"Near-surface disposal facility" means a land disposal facility in which radioactive waste is disposed of in or within the upper 30 meters of the earth's surface.

"Person" means (1) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, government agency other than the Commission or the Department of Energy, (except that the Department of Energy is considered a person within the meaning of the regulations in this part to the extent that its facilities and activities are subject to the licensing and related regulatory authority of the Commission pursuant to section 202 of the Energy Reorganization Act of 1974 (88 Stat. 1244)), any State or any political subdivision of or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing.

"Pyrophoric liquid" means any liquid that ignites spontaneously in dry or moist air at or below 130°F (54.5°C). A pyrophoric solid is any solid material, other than one classed as an explosive, which under normal conditions is liable to cause fires through friction, retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious transportation, handling, or disposal hazard. Included are spontaneously combustible and water-reactive materials.

"Site closure and stabilization" means those actions that are taken upon completion of operations that prepare the disposal site for custodial care and that assure that the disposal site will remain stable and will not need ongoing active maintenance.

"State" means any State, Territory, or possession of the United States, Puerto Rico, and the District of Columbia.

"Stability" means structural stability.

"Surveillance" means observation of the disposal site for purposes of visual detection of need for maintenance, custodial care, evidence of intrusion, and compliance with other license and regulatory requirements.

"Tribal Governing Body" means a Tribal organization as defined in the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450).

"Waste" means those low-level radioactive wastes containing source, special nuclear, or byproduct material that are acceptable for disposal in a land disposal facility. For the purposes of this definition, low-level waste has the same meaning as in the Low-Level Waste Policy Act, that is radioactive waste not classified as high-level radioactive waste, transuranic waste, spent nuclear fuel, or byproduct material as defined in section 11e.(2) of the Atomic Energy Act (uranium or thorium tailings and waste).

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§ 61.3 License required.

(a) No person may receive, possess, and dispose of radioactive waste containing source, special nuclear, or byproduct material at a land disposal facility unless authorized by a license issued by the Commission pursuant to this part, or unless exemption has been granted by the Commission under § 61.6 of this part.

(b) Each person shall file an application with the Commission and obtain a license as provided in this part before commencing construction of a land disposal facility. Failure to comply with this requirement may be grounds for denial of a license.

§ 61.4 Communications.

Except where otherwise specified, all communications and reports concerning the regulations in this part and applications filed under them should be addressed to the Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Communications, reports, and applications may be delivered in person at the Commission's offices at 1717 H Street NW., Washington, D.C. or 7915 Eastern Avenue, Silver Spring, Maryland.

§ 61.5 Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be considered binding upon the Commission.

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§ 61.6 Exemptions.

The Commission may, upon application by any interested person, or upon its own initiative, grant any exemption from the requirements of the regulations in this part as it determines is authorized by law, will not endanger life or property or the common defense and security, and is otherwise in the public interest.

§ 61.7 Concepts.

(a) *The Disposal Facility.* (1) Part 61 is intended to apply to land disposal of radioactive waste and not to other methods such as sea or extraterrestrial disposal. Part 61 contains procedural requirements and performance objectives applicable to any method of land disposal. It contains specific technical requirements for near-surface disposal of radioactive waste which involves disposal in the uppermost portion of the earth, approximately 30 meters. Burial deeper than 30 meters may also be satisfactory. Technical requirements for alternative methods will be added in the future.

(2) Near-surface disposal of radioactive waste takes place at a near-surface disposal facility, which includes all of the land and buildings necessary to carry out the disposal. The disposal site is that portion of the facility which waste is used for disposal of waste and consists of disposal units and a buffer zone. A disposal unit is a discrete portion of the disposal site into which waste is placed for disposal. For near-surface disposal, the disposal unit is usually a trench. A buffer zone is a portion of the disposal site that is controlled by the licensee and that lies under the site and between the boundary of the disposal site and any disposal unit. It provides controlled space to establish monitoring locations which are intended to provide an early warning of radionuclide movement, and to take mitigative measures if needed. In choosing a disposal site, site characteristics should be considered in terms of the indefinite future and evaluated for at least a 500 year time frame.

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(b) *Waste Classification and Near-Surface Disposal.* (1) Disposal of radioactive waste in near-surface disposal facilities has the following safety objectives: protection of the general population from releases of radioactivity, protection of individuals from inadvertent intrusion, and protection of individuals during operations. A fourth objective is to ensure stability of the site after closure.

(2) A cornerstone of the system is stability—stability of the waste and the disposal site so that once emplaced and covered, the access of water to the waste can be minimized. Migration of radionuclides is thus minimized, long-term active maintenance can be avoided, and potential exposures to intruders reduced. While stability is a desirable characteristic for all waste much radioactive waste does not contain sufficient amounts of radionuclides to be of great concern from these standpoints; this waste, however, tends to be unstable, such as ordinary trash type wastes. If mixed with the higher activity waste, their deterioration could lead to failure of the system and permit water to penetrate the disposal unit and cause problems with the higher activity waste. Therefore, in order to avoid placing requirements for a stable waste form on relatively innocuous waste, these wastes have been classed as Class A waste. The Class A waste will be disposed of in separate disposal units at the disposal site. However, Class A waste that is stable may be mixed with other classes of waste. Those higher activity wastes that should be stable for proper disposal are classed as Class B and C waste. To the extent that it is practicable, Class B and C waste forms or containers should be designed to be stable, i.e., maintain gross physical properties and identity, over 300 years. For certain radionuclides prone to

migration, a maximum disposal site inventory based on the characteristics of the disposal site may be established to limit potential exposure.

(3) It is possible but unlikely that persons might occupy the site in the future and engage in normal pursuits without knowing that they were receiving radiation exposure. These persons are referred to as inadvertent intruders. Protection of such intruders can involve two principal controls: institutional control over the site after operations by the site owner to ensure that no such occupation or improper use of the site occurs; or, designating which waste could present an unacceptable risk to an intruder, and disposing of this waste in a manner that provides some form of intruder barrier that is intended to prevent contact with the waste. This regulation incorporates both types of protective controls.

(4) Institutional control of access to the site is required for up to 100 years. This permits the disposal of Class A and Class B waste without special provisions for intrusion protection, since these classes of waste contain types and quantities of radioisotopes that will decay during the 100-year period and will present an acceptable hazard to an intruder. The government landowner administering the active institutional control program has flexibility in controlling site access which may include allowing productive uses of the land provided the integrity and long-term performance of the site are not affected.

(5) Waste that will not decay to levels which present an acceptable hazard to an intruder within 100 years is designated as Class C waste. This waste is disposed of at a greater depth than the other classes of waste so that subsequent surface activities by an intruder will not disturb the waste. Where site conditions prevent deeper disposal, intruder barriers such as concrete covers may be used. The effective life of these intruder barriers should be 500 years. A maximum concentration of radionuclides is specified for all wastes so that at the end of the 500 year period, remaining radioactivity will be at a level that does not pose an unacceptable hazard to an intruder or public health and safety. Waste with concentrations above these limits is generally unacceptable for near-surface disposal. There may be some instances where waste with concentrations greater than permitted for Class C would be acceptable for near-surface disposal with special processing or design. These will be evaluated on a case-by-case basis. Class C waste must also be stable.

(c) *The Licensing Process.* (1) During the preoperational phase, the potential applicant goes through a process of disposal site selection by selecting a region of interest, examining a number of possible disposal sites within the area of interest and narrowing the choice to the proposed site. Through a detailed investigation of the disposal site characteristics the potential applicant obtains data on which to base an analysis of the disposal site's suitability. Along with these data and analyses, the applicant submits other more general information to the Commission in the form of an application for a license for land disposal. The Commission's review of the application is in accordance with administrative procedures established by rule and may involve participation by affected State governments or Indian tribes. While the proposed disposal site must be owned by a State or the Federal government before the Commission will issue a license, it may be privately owned during the preoperational phase if suitable arrangements have been made with a State or the Federal government to take ownership in fee of the land before the license is issued.

(2) During the operational phase, the licensee carries out disposal activities in accordance with the requirements of this regulation and any conditions on the license. Periodically, the authority to conduct the above ground operations and dispose of waste will be subject to a license renewal, at which time the operating history will be reviewed and a decision made to permit or deny continued operation. When disposal operations are to cease, the licensee applies for an amendment to his license to permit site closure. After final review of the licensee's site closure and stabilization plan, the Commission may approve the final activities necessary to prepare the disposal site so that ongoing active maintenance of the site is not required during the period of institutional control.

(3) During the period when the final site closure and stabilization activities are being carried out, the licensee is in a disposal site closure phase. Following that, for a period of 5 years, the licensee must remain at the disposal site for a period of post-closure observation and maintenance to assure that the disposal site is stable and ready for institutional control. The Commission may approve shorter or require longer periods if conditions warrant. At the end of this period, the licensee applies for a license transfer to the disposal site owner.

(4) After a finding of satisfactory disposal site closure, the Commission will transfer the license to the State or Federal government that owns the disposal site. If the Department of Energy is the Federal agency administering the land on behalf of the Federal government the license will be terminated because the Commission lacks regulatory authority over the Department for this activity. Under the conditions of the transferred license, the owner will carry out a program of monitoring to assure continued satisfactory disposal site performance, physical surveillance to restrict access to the site and carry out minor custodial activities. During this period, productive uses of the land might be permitted if those uses do not affect the stability of the site and its ability to meet the performance objectives. At the end of the prescribed period of institutional control, the license will be terminated by the Commission.

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§ 61.8 Reporting, recordkeeping, and application requirements: OMB approval not required.

The information collection requirements contained in this part affect fewer than ten persons. Therefore, under section 3506(c)(5) of the Paperwork Reduction Act of 1980 (Pub. L. 96–511), OMB clearance is not required for these information collection requirements.

§ 61.9 Employee protection.

(a) Discrimination by a Commission licensee, an applicant for a Commission licensee, or a contractor or subcontractor of a Commission licensee or applicant against an employee for engaging in certain protected activities is prohibited. Discrimination includes discharge and other actions that relate to compensation, terms, conditions, and privileges of employment. The protected activities are established in Section 210 of the Energy Reorganization Act of 1974, as amended, and in general are related to the administration or enforcement of a requirement imposed under the Atomic Energy Act or the Energy Reorganization Act.

(1) The protected activities include but are not limited to—(i) Providing the Commission information about possible violations of requirements imposed under either of the above statutes;

(ii) Requesting the Commission to institute action against his or her employer for the administration or enforcement of these requirements; or

(iii) Testifying in any Commission proceeding.

(2) These activities are protected even if no formal proceeding is actually initiated as a result of the employee assistance or participation.

(3) This section has no application to any employee alleging discrimination prohibited by this section who, acting without direction from his or her employer (or the employer's agent), deliberately causes a violation of any requirement of the Energy Reorganization Act of 1974, as amended, or the Atomic Energy Act of 1954, as amended.

(b) Any employee who believes that he or she has been discharged or otherwise discriminated against by any person for engaging in the protected activities specified in paragraph (a)(1) of this section may seek a remedy for the discharge or discrimination through an administrative proceeding in the Department of Labor. The administrative proceeding must be initiated within 30 days after an alleged violation occurs by filing a complaint alleging the violation with the Department of Labor, Employment Standards Administration, Wage and Hour Division. The Department of Labor may order reinstatement, back pay, and compensatory damages.

(c) A violation of paragraph (a) of this section by a Commission licensee, an applicant for a Commission licensee, or a contractor or subcontractor of a Commission licensee or applicant may be grounds for—

(1) Denial, revocation, or suspension of the license.

(2) Imposition of a civil penalty on the licensee or applicant.

(3) Other enforcement action.

(d) Actions taken by an employer, or others, which adversely affect an employee may be predicated upon nondiscriminatory grounds. The prohibition applies when the adverse action occurs because the employee has engaged in protected activities. An employee's engagement in protected activities does not automatically render him or her immune from discharge or discipline for legitimate reasons or from adverse action dictated by non-prohibited considerations.

(e) Each licensee and each applicant shall post Form NRC–3, "Notice to Employees," on its premises. Posting must be at locations sufficient to permit employees protected by this section to observe a copy on the way to or from their place of work. Premises must be posted not later than 30 days after an application is docketed and remain posted while the application is pending before the Commission, during the term of the license, and for 30 days following license termination.

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Note.—Copies of Form NRC–3 may be obtained by writing to the Regional Administrator of the appropriate U.S. Nuclear Regulatory Commission Regional Office listed in Appendix D, Part 20 of this chapter or the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Subpart B—Licenses

§ 61.10 Content of application.

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An application to receive from others, possess and dispose of wastes containing or contaminated with source, byproduct or special nuclear material by land disposal must consist of general information, specific technical information, institutional information, and financial information as set forth in §§ 61.11 through 61.16. An environmental report prepared in accordance with Subpart A of Part 51 of this chapter must accompany the application.

§ 61.11 General information.

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The general information must include each of the following:

(a) Identity of the applicant including:

(1) The full name, address, telephone number and description of the business or occupation of the applicant;

(2) If the applicant is a partnership, the name, and address of each partner and the principal location where the partnership does business;

(3) If the applicant is a corporation or an unincorporated association, (i) the state where it is incorporated or organized and the principal location where it does business, and (ii) the names and addresses of its directors and principal officers; and

(4) If the applicant is acting as an agent or representative of another person in filing the application, all information required under this paragraph must be supplied with respect to the other person.

(b) Qualifications of the applicant:

(1) The organizational structure of the applicant, both offsite and onsite, including a description of lines of authority and assignments of responsibilities, whether in the form of administrative directives, contract provisions, or otherwise;

(2) The technical qualifications, including training and experience, of the applicant and members of the applicant's staff to engage in the proposed activities. Minimum training and experience requirements for personnel filling key positions described in Paragraph 61.11(b)(1) must be provided;

(3) A description of the applicant's personnel training program; and

(4) The plan to maintain an adequate complement of trained personnel to carry out waste receipt, handling, and disposal operations in a safe manner.

(c) A description of:

(1) The location of the proposed disposal site;

(2) The general character of the proposed activities;

(3) The types and quantities of radioactive waste to be received, possessed, and disposed of;

(4) Plans for use of the land disposal facility for purposes other than disposal of radioactive wastes; and

(5) The proposed facilities and equipment.

(d) Proposed schedules for construction, receipt of waste, and first emplacement of waste at the proposed land disposal facility.

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§ 61.12 Specific technical information.

The specific technical information must include the following information needed for demonstration that the performance objectives of Subpart C of this part and the applicable technical requirements of Subpart D of this part will be met:

(a) A description of the natural and demographic disposal site characteristics as determined by disposal site selection and characterization activities. The description must include geologic, geotechnical, hydrologic, meteorologic, climatologic, and biotic features of the disposal site and vicinity.

(b) A description of the design features of the land disposal facility and the disposal units. For near-surface disposal, the description must include those design features related to infiltration of water; integrity of covers for disposal units; structural stability of backfill, wastes, and covers; contact of wastes with standing water; disposal site drainage; disposal site closure and stabilization; elimination to the extent practicable of long-term disposal site maintenance; inadvertent intrusion; occupational exposures; disposal site monitoring; and adequacy of the size of

the buffer zone for monitoring and potential mitigative measures.

(c) A description of the principal design criteria and their relationship to the performance objectives.

(d) A description of the design basis natural events or phenomena and their relationship to the principal design criteria.

(e) A description of codes and standards which the applicant has applied to the design and which will apply to construction of the land disposal facilities.

(f) A description of the construction and operation of the land disposal facility. The description must include as a minimum the methods of construction of disposal units; waste emplacement; the procedures for and areas of waste segregation; types of intruder barriers; onsite traffic and drainage systems; survey control program; methods and areas of waste storage; and methods to control surface water and groundwater access to the wastes. The description must also include a description of the methods to be employed in the handling and disposal of wastes containing chelating agents or other non-radiological substances that might affect meeting the performance objectives in Subpart C of this part.

(g) A description of the disposal site closure plan, including those design features which are intended to facilitate disposal site closure and to eliminate the need for ongoing active maintenance.

(h) An identification of the known natural resources at the disposal site, the exploitation of which could result in inadvertent intrusion into the low-level wastes after removal of active institutional control.

(i) A description of the kind, amount, classification and specifications of the radioactive material proposed to be received, possessed, and disposed of at the land disposal facility.

(j) A description of the quality control program for the determination of natural disposal site characteristics and for quality control during the design, construction, operation and closure of the land disposal facility and the receipt, handling, and emplacement of waste. Audits and managerial controls must be included.

(k) A description of the radiation safety program for control and monitoring of radioactive effluents to ensure compliance with the performance objective in § 61.41 of this part and occupational radiation exposure to ensure compliance with the requirements of Part 20 of this chapter and to control contamination of personnel, vehicles, equipment, buildings, and the disposal site. Both routine operations and accidents must be addressed. The program description must include procedures, instrumentation, facilities, and equipment.

(l) A description of the environmental monitoring program to provide data to evaluate potential health and environmental impacts and the plan for taking corrective measures if migration of radionuclides is indicated.

(m) A description of the administrative procedures that the applicant will apply to control activities at the land disposal facility.

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§ 61.13 Technical analyses.

The specific technical information must also include the following analyses needed to demonstrate that the performance objectives of Subpart C of this part will be met:

(a) Pathways analyzed in demonstrating protection of the general population from releases of radioactivity must include air, soil, groundwater, surface water, plant uptake, and exhumation by burrowing animals. The analyses must clearly identify and differentiate between the roles performed by the natural disposal site characteristics and design features in isolating and segregating the wastes. The analyses must clearly demonstrate that there is reasonable assurance that the exposure to humans from the release of radioactivity will not exceed the limits set forth in § 61.41.

(b) Analyses of the protection of individuals from inadvertent intrusion must include demonstration that there is reasonable assurance the waste classification and segregation requirements will be met and that adequate barriers to inadvertent intrusion will be provided.

(c) Analyses of the protection of individuals during operations must include assessments of expected exposures due to routine operations and likely accidents during handling, storage, and disposal of waste. The analyses must provide reasonable assurance that exposures will be controlled to meet the requirements of Part 20 of this chapter.

(d) Analyses of the long-term stability of the disposal site and the need for ongoing active maintenance after closure must be based upon analyses of active natural processes such as erosion, mass wasting, slope failure, settlement of wastes and backfill, infiltration through covers over disposal areas and adjacent soils, and surface drainage of the disposal site. The analyses must provide reasonable assurance that there will not be a need for ongoing active maintenance of the disposal site following closure.

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§ 61.14 Institutional information.

The institutional information must include:

(a) A certification by the Federal or State government which owns the disposal site that the Federal or State government is prepared to accept transfer of the license when the provisions of § 61.30 are met, and will assume responsibility for custodial care after site closure and postclosure observation and maintenance.

(b) Where the proposed disposal site is on land not owned by the Federal or a State government, the applicant must submit evidence that arrangements have been made for assumption of ownership in fee by the Federal or a State government before the Commission issues a license.

§ 61.15 Financial information.

The financial information must be sufficient to demonstrate that the financial qualifications of the applicant are adequate to carry out the activities for which the license is sought and meet other financial assurance requirements as specified in Subpart E of this part.

§ 61.16 Other information.

Depending upon the nature of the wastes to be disposed of, and the design and proposed operation of the land disposal facility, additional information may be requested by the Commission including the following:

(a) Physical security measures, if appropriate. Any application to receive and possess special nuclear material in quantities subject to the requirements of Part 73 of this chapter shall demonstrate how the physical security requirements of Part 73 will be met. In determining whether receipt and possession will be subject to the requirements of Part 73, the applicant shall not consider the quantity of special nuclear material that has been disposed of.

(b) Safety information concerning criticality, if appropriate.

(1) Any application to receive and possess special nuclear material in quantities that would be subject to the requirements of § 70.24, "Criticality accident requirements" of Part 70 of this chapter shall demonstrate how the requirements of that section will be met, unless the applicant requests an exemption pursuant to § 70.24(d). In determining whether receipt and possession would be subject to the requirements of § 70.24, the applicant shall not consider the quantity of special nuclear material that has been disposed of.

(2) Any application to receive and possess special nuclear material shall describe proposed procedures for avoiding accidental criticality, which address both storage of special nuclear material prior to disposal and waste emplacement for disposal.

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§ 61.20 Filing and distribution of application.

(a) An application for a license under this part, and any amendments thereto, shall be filed with the Director, must be signed by the applicant or the applicant's authorized representative under oath, and must consist of 1 signed original and 2 copies.

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(b) Another 85 copies of the application must be retained by the applicant for distribution in accordance with written instructions from the Director or designee.

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(c) *Fees.* Application, amendment, and inspection fees applicable to a license covering the receipt and disposal of radioactive wastes in a land disposal facility are required by Part 170 of this chapter.

§ 61.21 Elimination of repetition.

In its application, the applicant may incorporate by reference information contained in previous applications, statements, or reports filed with the Commission if these references are clear and specific.

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§ 61.22 Updating of application.

(a) The application must be as complete as possible in the light of information that is available at the time of submittal.

(b) The applicant shall supplement its application in a timely manner, as necessary, to permit the Commission to review, prior to issuance of a license, any changes in the activities proposed to be carried out or new information regarding the proposed activities.

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§ 61.23 Standards for issuance of a license.

A license for the receipt, possession, and disposal of waste containing or contaminated with source, special nuclear, or byproduct material will be issued by the Commission upon finding that the issuance of the license will not be inimical to the common defense and security and will not constitute an unreasonable risk to the health and safety of the public, and:

(a) The applicant is qualified by reason of training and experience to carry out the disposal operations requested in a manner that protects health and minimizes danger to life or property.

(b) The applicant's proposed disposal site, disposal design, land disposal facility operations (including equipment, facilities, and procedures), disposal site closure, and postclosure institutional control are adequate to protect the public health and safety in that they provide reasonable assurance that the general population will be protected from releases of radioactivity as specified in the performance objective in § 61.41, Protection of the general population from releases of radioactivity.

(c) The applicant's proposed disposal site, disposal site design, land disposal facility operations (including equipment, facilities, and procedures), disposal site closure, and postclosure institutional control are adequate to protect the public health and safety in that they will provide reasonable assurance that individual inadvertent intruders are protected in accordance with the performance objective in § 61.42, Protection of individuals from inadvertent intrusion.

(d) The applicant's proposed land disposal facility operations, including equipment, facilities, and procedures, are adequate to protect the public health and safety in that they will provide reasonable assurance that the standards for radiation protection set out in Part 20 of this chapter will be met.

(e) The applicant's proposed disposal site, disposal site design, land disposal facility operations, disposal site closure, and postclosure institutional control are adequate to protect the public health and safety in that they will provide reasonable assurance that long-term stability of the disposed waste and the disposal site will be achieved and will eliminate to the extent practicable the need for ongoing active maintenance of the disposal site following closure.

(f) The applicant's demonstration provides reasonable assurance that the applicable technical requirements of Subpart D of this part will be met.

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(g) The applicant's proposal for institutional control provides reasonable assurance that institutional control will be provided for the length of time found necessary to ensure the findings in paragraphs (b)–(e) of this section and that the institutional control meets the requirements of § 61.59, Institutional requirements.

(h) The information on financial assurances meets the requirements of Subpart E of this part.

(i) The applicant's physical security information provides reasonable assurance that the requirements of Part 73 of this chapter will be met, insofar as they are applicable to special nuclear material to be possessed before disposal under the license.

(j) The applicant's criticality safety procedures are adequate to protect the public health and safety and provide reasonable assurance that the requirements of § 70.24, Criticality accident requirements, of Part 70 of this chapter will be met, insofar as they are applicable to special nuclear material to be possessed before disposal under the license.

(k) Any additional information submitted as requested by the Commission pursuant to § 61.16, Other information, is adequate.

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(l) The requirements of Subpart A of Part 51 of this chapter have been met.

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§ 61.24 Conditions of licenses.

(a) A license issued under this part, or any right thereunder, may be transferred, assigned, or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of the license to any person, only if the Commission finds, after securing full information, that the transfer is in accordance with the provisions of the Atomic Energy Act and gives its consent in writing in the form of a license amendment.

(b) The licensee shall submit written statements under oath upon request of the Commission, at any time before termination of the license, to enable the Commission to determine whether or not the license should be modified, suspended, or revoked.

(c) The license will be transferred to the site owner only on the full implementation of the final closure plan as approved by the Commission, including postclosure observation and maintenance.

(d) The licensee shall be subject to the provisions of the Atomic Energy Act now or hereafter in effect, and to all rules, regulations, and orders of the Commission. The terms and conditions of the license are subject to amendment,

revision, or modification, by reason of amendments to, or by reason of rules, regulations, and orders issued in accordance with the terms of the Atomic Energy Act.

(e) Any license may be revoked, suspended or modified in whole or in part for any material false statement in the application or any statement of fact required under Section 182 of the Act, or because of conditions revealed by any application or statement of fact or any report, record, or inspection or other means which would warrant the Commission to refuse to grant a license to the original application, or for failure to operate the facility in accordance with the terms of the license, or for any violation of, or failure to observe any of the terms and conditions of the Act, or any rule, regulation, license or order of the Commission.

(f) Each person licensed by the Commission pursuant to the regulations in this part shall confine possession and use of materials to the locations and purposes authorized in the license.

(g) No radioactive waste may be disposed of until the Commission has inspected the land disposal facility and has found it to be in conformance with the description, design, and construction described in the application for a license.

(h) The Commission may incorporate in any license at the time of issuance, or thereafter, by appropriate rule, regulation or order, additional requirements and conditions with respect to the licensee's receipt, possession, and disposal of source, special nuclear or byproduct material as it deems appropriate or necessary in order to:

(1) Promote the common defense and security;

(2) Protect health or to minimize danger to life or property;

(3) Require reports and the keeping of records, and to provide for inspections of activities under the license that may be necessary or appropriate to effectuate the purposes of the Act and regulations thereunder.

(i) Any licensee who receives and possesses special nuclear material under this part in quantities that would be subject to the requirements of § 70.24 of Part 70 of this chapter shall comply with the requirements of that section. The licensee shall not consider the quantity of special nuclear material that has been disposed of.

(j) The authority to dispose of wastes expires on the date stated in the license except as provided in § 61.27(a) of this part.

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§ 61.25 Changes.

(a) Except as provided for in specific license conditions, the licensee shall not make changes in the land disposal facility or procedures described in the license application. The license will include conditions restricting subsequent changes to the facility and the procedures authorized which are important to public health and safety. These license restrictions will fall into three categories of descending importance to public health and safety as follows: (1) those features and precedures which may not be changed without (i) 60 days prior notice to the Commission, (ii) 30 days notice of opportunity for a prior hearing, and (iii) prior Commission approval; (2) those features and procedures which may not be changed without (i) 60 days prior notice to the Commisson, and (ii) prior Commission approval; and (3) those features and procedures which may not be changed without 60 days prior notice to the Commission. Features and procedures falling in paragraph (a)(3) of this section may not be changed without prior Commission approval if the Commission, after having received the required notice, so orders.

(b) Amendments authorizing site closure, license transfer, or license termination shall be included in paragraph (a)(1) of this section.

(c) The Commission shall provide a copy of the notice for opportunity for hearings provided in paragraph (a)(1) of this section to State and local officials or tribal governing bodies specified in § 2.104(e) of Part 2 of this chapter.

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§ 61.26 Amendment of license.

(a) An application for amendment of a license must be filed in accordance with § 61.20 and shall fully describe the changes desired.

(b) In determining whether an amendment to a license will be approved, the Commission will apply the criteria set forth in § 61.23.

§ 61.27 Application for renewal or closure.

(a) Any expiration date on a license applies only to the above ground activities and to the authority to dispose of waste. Failure to renew the license shall not relieve the licensee of responsibility for carrying out site closure, postclosure observation and transfer of the license to the site owner. An application for renewal or an application for closure under § 61.28 must be filed at least 30 days prior to license expiration.

(b) Applications for renewal of a license must be filed in accordance with §§ 61.10 through 61.16 and § 61.20. Applications for closure must be filed in accordance with §§ 61.20 and 61.28. Information contained in previous applications, statements or reports filed with the Commission under the license may be incorporated by reference if the references are clear and specific.

(c) In any case in which a licensee has timely filed an application for renewal of a license, the license for continued receipt and disposal of licensed materials does not expire until the Commission has taken final action on the application for renewal.

(d) In determining whether a license will be renewed, the Commission will apply the criteria set forth in § 61.23.

§ 61.28 Contents of application for closure.

(a) Prior to final closure of the disposal site, or as otherwise directed by the Commission, the applicant shall submit an application to amend the license for closure. This closure application must include a final revision and specific details of the disposal site closure plan included as part of the license application submitted under § 61.12(g) that includes each of the following:

(1) Any additional geologic, hydrologic, or other disposal site data pertinent to the long-term containment of emplaced radioactive wastes obtained during the operational period.

(2) The results of tests, experiments, or other analyses relating to backfill of excavated areas, closure and sealing, waste migration and interaction with emplacement media, or any other tests, experiments, or analysis pertinent to the long-term containment of emplaced waste within the disposal site.

(3) Any proposed revision of plans for:

(i) Decontamination and/or dismantlement of surface facilities;

(ii) Backfilling of excavated areas; or

(iii) Stabilization of the disposal site for post-closure care.

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(b) An environmental report or a supplement to an environmental report prepared in accordance with Subpart A of Part 51 of this chapter must accompany the application.

(c) Upon review and consideration of an application to amend the license for closure submitted in accordance with paragraph (a) of this section, the Commission shall issue an amendment authorizing closure if there is reasonable assurance that the long-term performance objectives of Subpart C of this part will be met.

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§ 61.29 Post-closure observation and maintenance.

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Following completion of closure authorized in § 61.28, the licensee shall observe, monitor, and carry out

necessary maintenance and repairs at the disposal site until the license is transferred by the Commission in accordance with § 61.30. Responsibility for the disposal site must be maintained by the licensee for 5 years. A shorter or longer time period for post-closure observation and maintenance may be established and approved as part of the site closure plan, based on site-specific conditions.

§ 61.30 Transfer of license.

(a) Following closure and the period of post-closure observation and maintenance, the licensee may apply for an amendment to transfer the license to the disposal site owner. The license shall be transferred when the Commission finds:

(1) That the closure of the disposal site has been made in conformance with the licensee's disposal site closure plan, as amended and approved as part of the license;

(2) That reasonable assurance has been provided by the licensee that the performance objectives of Subpart C of this part are met;

(3) That any funds and necessary records for care will be transferred to the disposal site owner;

(4) That the post-closure monitoring program is operational for implementation by the disposal site owner; and

(5) That the Federal or State government agency which will assume responsibility for institutional control of the disposal site is prepared to assume responsibility and ensure that the institutional requirements found necessary under § 61.23(g) will be met.

(b) [Reserved]

§ 61.31 Termination of license.

(a) Following any period of institutional control needed to meet the requirements found necessary under § 61.23, the licensee may apply for an amendment to terminate the license.

(b) This application must be filed, and will be reviewed, in accordance with the provision of § 61.20 and of this section.

(c) A license is terminated only when the Commission finds:

(1) That the institutional control requirements found necessary under § 61.23(g) have been met; and

(2) That any additional requirements resulting from new information developed during the institutional control period have been met, and that permanent monuments or markers warning against intrusion have been installed.

Subpart C—Performance Objectives

§ 61.40 General requirement.

Land disposal facilities must be sited, designed, operated, closed, and controlled after closure so that reasonable assurance exists that exposures to humans are within the limits established in the performance objectives in §§ 61.41 through 61.44.

§ 61.41 Protection of the general population from releases of radioactivity.

Concentrations of radioactive material which may be released to the general environment in ground water, surface water, air, soil, plants, or animals must not result in an annual dose exceeding an equivalent of 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public. Reasonable effort should be made to maintain releases of radioactivity in effluents to the general environment as low as is reasonably achievable.

§ 61.42 Protection of individuals from inadvertent intrusion.

Design, operation, and closure of the land disposal facility must ensure protection of any individual inadvertently intruding into the disposal site and occupying the site or contacting the waste at any time after active institutional controls over the disposal site are removed.

§ 61.43 Protection of individuals during operations.

Operations at the land disposal facility must be conducted in compliance with the standards for radiation protection set out in Part 20 of this chapter, except for releases of radioactivity in effluents from the land disposal facility, which shall be governed by § 61.41 of this part. Every reasonable effort shall be made to maintain radiation exposures as low as is reasonably achievable.

§ 61.44 Stability of the disposal site after closure.

The disposal facility must be sited, designed, used, operated, and closed to achieve long-term stability of the disposal site and to eliminate to the extent practicable the need for ongoing active maintenance of the disposal site following closure so that only surveillance, monitoring, or minor custodial care are required.

Subpart D—Technical Requirements for Land Disposal Facilities

§ 61.50 Disposal site suitability requirements for land disposal.

(a) Disposal site suitability for near-surface disposal.

(1) The purpose of this section is to specify the minimum characteristics a disposal site must have to be acceptable for use as a near-surface disposal facility. The primary emphasis in disposal site suitability is given to isolation of wastes, a matter having long-term impacts, and to disposal site features that ensure that the long-term performance objectives of Subpart C of this part are met, as opposed to short-term convenience or benefits.

(2) The disposal site shall be capable of being characterized, modeled, analyzed and monitored.

(3) Within the region or state where the facility is to be located, a disposal site should be selected so that projected population growth and future developments are not likely to affect the ability of the disposal facility to meet the performance objectives of Subpart C of this part.

(4) Areas must be avoided having known natural resources which, if exploited, would result in failure to meet the performance objectives of Subpart C of this part.

(5) The disposal site must be generally well drained and free of areas of flooding or frequent ponding. Waste disposal shall not take place in a 100-year flood plain, coastal high-hazard area or wetland, as defined in Executive Order 11988, "Floodplain Management Guidelines."

(6) Upstream drainage areas must be minimized to decrease the amount of runoff which could erode or inundate waste disposal units.

(7) The disposal site must provide sufficient depth to the water table that ground water intrusion, perennial or otherwise, into the waste will not occur. The Commission will consider an exception to this requirement to allow disposal below the water table if it can be conclusively shown that disposal site characteristics will result in molecular diffusion being the predominant means of radionuclide movement and the rate of movement will result in the performance objectives of Subpart C of this part being met. In no case will waste disposal be permitted in the zone of fluctuation of the water table.

(8) The hydrogeologic unit used for disposal shall not discharge ground water to the surface within the disposal site.

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(9) Areas must be avoided where tectonic processes such as faulting, folding, seismic activity, or vulcanism may occur with such frequency and extent to significantly affect the ability of the disposal site to meet the performance objectives of Subpart C of this part, or may preclude defensible modeling and prediction of long-term impacts.

(10) Areas must be avoided where surface geologic processes such as mass wasting, erosion, slumping, landsliding, or weathering occur with such frequency and extent to significantly affect the ability of the disposal site to meet the performance objectives of Subpart C of this part, or may preclude defensible modeling and prediction of long-term impacts.

(11) The disposal site must not be located where nearby facilities or activities could adversely impact the ability of the site to meet the performance objectives of Subpart C of this part or significantly mask the environmental monitoring program.

(b) Disposal site suitability requirements for land disposal other than near-surface (reserved).

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§ 61.51 Disposal site design for land disposal.

(a) Disposal site design for near-surface disposal.

(1) Site design features must be directed toward long-term isolation and avoidance of the need for continuing active maintenance after site closure.

(2) The disposal site design and operation must be compatible with the disposal site closure and stabilization plan and lead to disposal site closure that provides reasonable assurance that the performance objectives of Subpart C of this part will be met.

(3) The disposal site must be designed to complement and improve, where appropriate, the ability of the disposal site's natural characteristics to assure that the performance objectives of Subpart C of this part will be met.

(4) Covers must be designed to minimize to the extent practicable water infiltration, to direct percolating or surface water away from the disposed waste, and to resist degradation by surface geologic processes and biotic activity.

(5) Surface features must direct surface water drainage away from disposal units at velocities and gradients which will not result in erosion that will require ongoing active maintenance in the future.

(6) The disposal site must be designed to minimize to the extent practicable the contact of water with waste during storage, the contact of standing water with waste during disposal, and the contact of percolating or standing water with wastes after disposal.

(b) Disposal site design for other than near-surface disposal (reserved).

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§ 61.52 Land disposal facility operation and disposal site closure.

(a) Near-surface disposal facility operation and disposal site closure.

(1) Wastes designated as Class A pursuant to § 61.55, must be segregated from other wastes by placing in disposal units which are sufficiently separated from disposal units for the other waste classes so that any interaction between Class A wastes and other wastes will not result in the failure to meet the performance objectives in Subpart C of this Part. This segregation is not necessary for Class A wastes if they meet the stability requirements in § 61.56(b) of this part.

(2) Wastes designated as Class C pursuant to § 61.55, must be disposed of so that the top of the waste is a minimum of 5 meters below the top surface of the cover or must be disposed of with intruder barriers that are designed to protect against an inadvertent intrusion for a least 500 years.

(3) All wastes shall be disposed of in accordance with the requirements of paragraphs (a)(4) through (11) of this section.

(4) Wastes must be emplaced in a manner that maintains the package integrity during emplacement, minimizes the void spaces between packages, and permits the void spaces to be filled.

(5) Void spaces between waste packages must be filled with earth or other material to reduce future subsidence within the fill.

(6) Waste must be placed and covered in a manner that limits the radiation dose rate at the surface of the cover to levels that at a minimum will permit the licensee to comply with all provisions of § 20.105 of this chapter at the time the license is transferred pursuant to § 61.30 of this part.

(7) The boundaries and locations of each disposal unit (e.g., trenches) must be accurately located and mapped by means of a land survey. Near-surface disposal units must be marked in such a way that the boundaries of each unit can be easily defined. Three permanent survey marker control points, referenced to United States Geological Survey (USGS) or National Geodetic Survey (NGS) survey control stations, must be established on the site to facilitate surveys. The USGS or NGS control stations must provide horizontal and vertical controls as checked against USGSD or NGS record files.

(8) A buffer zone of land must be maintained between any buried waste and the disposal site boundary and beneath the disposed waste. The buffer zone shall be of adequate dimensions to carry out environmental monitoring activities specified in § 61.53(d) of this part and take mitigative measures if needed.

(9) Closure and stabilization measures as set forth in the approved site closure plan must be carried out as each disposal unit (e.g., each trench) is filled and covered.

(10) Active waste disposal operations must not have an adverse effect on completed closure and stabilization measures.

(11) Only wastes containing or contaminated with radioactive materials shall be disposed of at the disposal site.

(b) Facility operation and disposal site closure for land disposal facilities other than near-surface (reserved).

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§ 61.53 Environmental monitoring.

(a) At the time a license application is submitted, the applicant shall have conducted a preoperational monitoring program to provide basic environmental data on the disposal site characteristics. The applicant shall obtain information about the ecology, meteorology, climate, hydrology, geology, geochemistry, and seismology of the disposal site. For those characteristics that are subject to seasonal variation, data must cover at least a twelve month period.

(b) The licensee must have plans for taking corrective measures if migration of radionuclides would indicate that the performance objectives of Subpart C may not be met.

(c) During the land disposal facility site construction and operation, the licensee shall maintain a monitoring program. Measurements and observations must be made and recorded to provide data to evaluate the potential health and environmental impacts during both the construction and the operation of the facility and to enable the evaluation of long-term effects and the need for mitigative measures. The monitoring system must be capable of providing early warning of releases of radionuclides from the disposal site before they leave the site boundary.

(d) After the disposal site is closed, the licensee responsible for post-operational surveillance of the disposal site shall maintain a monitoring system based on the operating history and the closure and stabilization of the disposal site. The monitoring system must be capable of providing early warning of releases of radionuclides from the

disposal site before they leave the site boundary.

§ 61.54 Alternative requirements for design and operations.

The Commission may, upon request or on its own initiative, authorize provisions other than those set forth in §§ 61.51 through 61.53 for the segregation and disposal of waste and for the design and operation of a land disposal facility on a specific basis, if it finds reasonable assurance of compliance with the performance objectives of Subpart C of this part.

§ 61.55 Waste classification.

(a) Classification of waste for near surface disposal.

(1) *Considerations.* Determination of the classification of radioactive waste involves two considerations. First, consideration must be given to the concentration of long-lived radionuclides (and their shorter-lived precursors) whose potential hazard will persist long after such precautions as institutional controls, improved waste form, and deeper disposal have ceased to be effective. These precautions delay the time when long-lived radionuclides could cause exposures. In addition, the magnitude of the potential dose is limited by the concentration and availability of the radionuclide at the time of exposure. Second, consideration must be given to the concentration of shorter-lived radionuclides for which requirements on institutional controls, waste form, and disposal methods are effective.

(2) *Classes of waste.* (i) Class A waste is waste that is usually segregated from other waste classes at the disposal site. The physical form and characteristics of Class A waste must meet the minimum requirements set forth in § 61.56(a). If Class A waste also meets the stability requirements set forth in § 61.56(b), it is not necessary to segregate the waste for disposal.

(ii) Class B waste is waste that must meet more rigorous requirements on waste form to ensure stability after disposal. The physical form and characteristics of Class B waste must meet both the minimum and stability requirements set forth in § 61.56.

(iii) Class C waste is waste that not only must meet more rigorous requirements on waste form to ensure stability but also requires additional measures at the disposal facility to protect against inadvertent intrusion. The physical form and characteristics of Class C waste must meet both the minimum and stability requirements set forth in § 61.56.

(iv) Waste that is not generally acceptable for near-surface disposal is waste for which waste form and disposal methods must be different, and in general more stringent, than those specified for Class C waste. In the absence of specific requirements in this part, proposals for disposal of this waste may be submitted to the Commission for approval, pursuant to § 61.58 of this part.

(3) Classification determined by long-lived radionuclides. If radioactive waste contains only radionuclides listed in Table 1, classification shall be determined as follows:

(i) If the concentration does not exceed 0.1 times the value in Table 1, the waste is Class A.

(ii) If the concentration exceeds 0.1 times the value in Table 1 but does not exceed the value in Table 1, the waste is Class C.

(iii) If the concentration exceeds the value in Table 1, the waste is not generally acceptable for near-surface disposal.

(iv) For wastes containing mixtures of radionuclides listed in Table 1, the total concentration shall be determined by the sum of fractions rule described in paragraph (a)(7) of this section.

TABLE 1

Radionuclide	Concentration curies per cubic meter
C-14	8
C-14 in activated metal	80
Ni-59 in activated metal	220
Nb-94 in activated metal	0.2
Tc-99	3
I-129	0.08
Alpha emitting transuranic nuclides with half-life greater than five years	[1]100
Pu-241	[1]3,500
Cm-242	[1]20,000

[1] Units are nanocuries per gram.

(4) Classification determined by short-lived radionuclides. If radioactive waste does not contain any of the radionuclides listed in Table 1, classification shall be determined based on the concentrations shown in Table 2. However, as specified in paragraph (a)(6) of this section, if radioactive waste does not contain any nuclides listed in either Table 1 or 2, it is Class A.

(i) If the concentration does not exceed the value in Column 1, the waste is Class A.

(ii) If the concentration exceeds the value in Column 1, but does not exceed the value in Column 2, the waste is Class B.

(iii) If the concentration exceeds the value in Column 2, but does not exceed the value in Column 3, the waste is Class C.

(iv) If the concentration exceeds the value in Column 3, the waste is not generally acceptable for near-surface disposal.

(v) For wastes containing mixtures of the nuclides listed in Table 2, the total concentration shall be determined by the sum of fractions rule described in paragraph (a)(7) of this section.

TABLE 2

Radionuclide	Concentration, curies per cubic meter		
	Col. 1	Col. 2	Col. 3
Total of all nuclides with less than 5 year half life	700	[1]	[1]
H-3	40	[1]	[1]
Co-60	700	[1]	[1]
Ni-63	3.5	70	700
Ni-63 in activated metal	35	700	7000
Sr-90	0.04	150	7000
Cs-137	1	44	4600

[1] There are no limits established for these radionuclides in Class B or C wastes. Practical considerations such as the effects of external radiation and internal heat generation on transportation, handling, and disposal will limit the concentrations for these wastes. These wastes shall be Class B unless the concentrations of other nuclides in Table 2 determine the waste to the Class C independent of these nuclides.

(5) Classification determined by both long- and short-lived radionuclides. If radioactive waste contains a mixture of radionuclides, some of which are listed in Table 1, and some of which are listed in Table 2, classification shall be determined as follows:

(i) If the concentration of a nuclide listed in Table 1 does not exceed 0.1 times the value listed in Table 1, the class shall be that determined by the concentration of nuclides listed in Table 2.

(ii) If the concentration of a nuclide listed in Table 1 exceeds 0.1 times the value listed in Table 1 but does not exceed the value in Table 1, the waste shall be Class C, provided the concentration of nuclides listed in Table 2 does not exceed the value shown in Column 3 of Table 2.

(6) Classification of wastes with radionuclides other than those listed in Tables 1 and 2. If radioactive waste does not contain any nuclides listed in either Table 1 or 2, it is Class A.

(7) The sum of the fractions rule for mixtures of radionuclides. For determining classification for waste that contains a mixture of radionuclides, it is necessary to determine the sum of fractions by dividing each nuclide's concentration by the appropriate limit and adding the resulting values. The appropriate limits must all be taken from the same column of the same table. The sum of the fractions for the column must be less than 1.0 if the waste class is to be determined by that column. Example: A waste contains Sr-90 in a

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concentration of 50 Ci/m³ and Cs-137 in a concentration of 22 Ci/m³. Since the concentrations both exceed the values in Column 1, Table 2, they must be compared to Column 2 values. For Sr-90 fraction 50/150=0.33; for Cs-137 fraction, 22/44=0.5; the sum of the fractions=0.83. Since the sum is less than 1.0, the waste is Class B.

(8) *Determination of concentrations in wastes.* The concentration of a radionuclide may be determined by indirect methods such as use of scaling factors which relate the inferred concentration of one radionuclide to another that is measured, or radionuclide material accountability, if there is reasonable assurance that the indirect methods can be correlated with actual measurements. The concentration of a radionuclide may be averaged over the volume of the waste, or weight of the waste if the units are expressed as nanocuries per gram.

§ 61.56 Waste characteristics.

(a) The following requirements are minimum requirements for all classes of waste and are intended to facilitate handling at the disposal site and provide protection of health and safety of personnel at the disposal site.

(1) Waste must not be packaged for disposal in cardboard or fiberboard boxes.

(2) Liquid waste must be solidified or packaged in sufficient absorbent material to absorb twice the volume of the liquid.

(3) Solid waste containing liquid shall contain as little free standing and noncorrosive liquid as is reasonably achievable, but in no case shall the liquid exceed 1% of the volume.

(4) Waste must not be readily capable of detonation or of explosive decomposition or reaction at normal pressures and temperatures, or of explosive reaction with water.

(5) Waste must not contain, or be capable of generating, quantities of toxic gases, vapors, or fumes harmful to persons transporting, handling, or disposing of the waste. This does not apply to radioactive gaseous waste packaged in accordance with paragraph (a)(7) of this section.

(6) Waste must not be pyrophoric. Pyrophoric materials contained in waste shall be treated, prepared, and packaged to be nonflammable.

(7) Waste in a gaseous form must be packaged at a pressure that does not exceed 1.5 atmospheres at 20°C. Total activity must not exceed 100 curies per container.

(8) Waste containing hazardous, biological, pathogenic, or infectious material must be treated to reduce to the maximum extent practicable the potential hazard from the non-radiological materials.

(b) The requirements in this section are intended to provide stability of the waste. Stability is intended to ensure that the waste does not structurally degrade and affect overall stability of the site through slumping, collapse, or other failure of the disposal unit and thereby lead to water infiltration. Stability is also a factor in limiting exposure to an inadvertent intruder, since it provides a recognizable and nondispersible waste.

(1) Waste must have structural stability. A structurally stable waste form will generally maintain its physical dimensions and its form, under the expected disposal conditions such as weight of overburden and compaction equipment, the presence of moisture, and microbial activity, and internal factors such as radiation effects and chemical changes. Structural stability can be provided by the waste form itself, processing the waste to a stable form, or placing the waste in a disposal container or structure that provides stability after disposal.

(2) Notwithstanding the provisions in §§ 61.56(a) (2) and (3), liquid wastes, or wastes containing liquid, must be converted into a form that contains as little free standing and noncorrosive liquid as is reasonably achievable, but in no case shall the liquid exceed 1% of the volume of the waste when the waste is in a disposal container designed to ensure stability, or 0.5% of the volume of the waste for waste processed to a stable form.

(3) Void spaces within the waste and between the waste and its package must be reduced to the extent practicable.

§ 61.57 Labeling.

Each package of waste must be clearly labeled to identify whether it is Class A waste, Class B waste, or class C waste in accordance with § 61.55.

§ 61.58 Alternative requirements for waste classification and characteristics.

The Commission may, upon request or on its own initiative, authorize other provisions for the classification and characteristics of waste on a specific basis, if, after evaluation, of the specific characteristics of the waste, disposal site, and method of disposal, it finds reasonable assurance of compliance with the performance objectives in Subpart C of this part.

§ 61.59 Institutional requirements.

(a) *Land ownership.* Disposal of radioactive waste received from other persons may be permitted only on land owned in fee by the Federal or a State government.

(b) *Institutional control.* The land owner or custodial agency shall carry out an institutional control program to physically control access to the disposal site following transfer of control of the disposal site from the disposal site operator. The institutional control program must also include, but not be limited to, carrying out an environmental monitoring program at the disposal site, periodic surveillance, minor custodial care, and other requirements as determined by the Commission; and administration of funds to cover the costs for these activities. The period of institutional controls will be determined by the Commission, but institutional controls may not be relied upon for more than 100 years following transfer of control of the disposal site to the owner.

Subpart E—Financial Assurances

§ 61.61 Applicant qualifications and assurances.

Each applicant shall show that it either possesses the necessary funds or has reasonable assurance of obtaining the necessary funds, or by a combination of the two, to cover the estimated costs of conducting all licensed activities over the planned operating life of the project, including costs of construction and disposal.

§ 61.62 Funding for disposal site closure and stabilization.

(a) The applicant shall provide assurance that sufficient funds will be available to carry out disposal site closure and stabilization, including: (1) Decontamination or dismantlement of land disposal facility structures; and (2) closure and stabilization of the disposal site so that following transfer of the disposal site to the site owner, the need for ongoing active maintenance is eliminated to the extent practicable and only minor custodial care, surveillance, and monitoring are required. These assurances shall be based on Commission-approved cost estimates reflecting the Commission-approved plan for disposal site closure and stabilization. The applicant's cost estimates must take into account total capital costs that would be incurred if an independent contractor were hired to perform the closure and stabilization work.

(b) In order to avoid unnecessary duplication and expense, the Commission will accept financial sureties that have been consolidated with earmarked financial or surety arrangements established to meet

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requirements of other Federal or State agencies and/or local governing bodies for such decontamination, closure and stabilization. The Commission will accept this arrangement only if they are considered adequate to satisfy these requirements and that the portion of the surety which covers the closure of the disposal site is clearly identified and committed for use in accomplishing these activities.

(c) The licensee's surety mechanism will be annually reviewed by the Commission to assure that sufficient funds are available for completion of the closure plan, assuming that the work has to be performed by an independent contractor.

(d) The amount of surety liability should change in accordance with the predicted cost of future closure and stabilization. Factors affecting closure and stabilization cost estimates include: inflation; increases in the amount of disturbed land; changes in engineering plans; closure and stabilization that has already been accomplished and any other conditions affecting costs. This will yield a surety that is at least sufficient at all times to cover the costs of closure of the disposal units that are expected to be used before the next license renewal.

(e) The term of the surety mechanism must be open ended unless it can be demonstrated that another arrangement would provide an equivalent level of assurance. This assurance could be provided with a surety mechanism which is written for a specified period of time (e.g., five years) yet which must be automatically renewed unless the party who issues the surety notifies the Commission and the beneficiary (the site owner) and the principal (the licensee) not less than 90 days prior to the renewal date of its intention not to renew. In such a situation the licensee must submit a replacement surety within 30 days after notification of cancellation. If the licensee fails to provide a replacement surety acceptable to the Commission, the site owner may collect on the original surety.

(f) Proof of forfeiture must not be necessary to collect the surety so that in the event that the licensee could not provide an acceptable replacement surety within the required time, the surety shall be automatically collected prior to its expiration. The conditions described above would have to be clearly stated on any surety instrument which is not open-ended, and must be agreed to by all parties. Liability under the surety mechanism must remain in effect until the closure and stabilization program has been completed and approved by the Commission and the license has been transferred to the site owner.

(g) Financial surety arrangements generally acceptable to the Commission include: surety bonds, cash deposits, certificates of deposits, deposits of government securities, escrow accounts, irrevocable letters or lines of credit, trust funds, and combinations of the above or such other types of arrangements as may be approved by the Commission. However, self-insurance, or any arrangement which essentially constitutes pledging the assets of the licensee, will not satisfy the surety requirement for private sector applicants since this provides no additional assurance other than that which already exists through license requirements.

§ 61.63 Financial assurances for institutional controls.

(a) Prior to the issuance of the license, the applicant shall provide for Commission review and approval a copy of a binding arrangement, such as a lease, between the applicant and the disposal site owner that ensures that sufficient funds will be available to cover the costs of monitoring and any required maintenance during the institutional control period. The binding arrangement will be reviewed periodically by the Commission to ensure that changes in inflation, technology and disposal facility operations are reflected in the arrangements.

(b) Subsequent changes to the binding arrangement specified in paragraph (a) of this section relevant to institutional control shall be submitted to the Commission for approval.

Subpart F—Participation by State Governments and Indian Tribes

§ 61.70 Scope.

This subpart describes mechanisms through which the Commission will implement a formal request from a State or tribal government to participate in the review of a license application for a land disposal facility. Nothing in this subpart may be construed to bar the State or tribal governing body from participating in subsequent Commission proceedings concerning the license application as provided under Federal law and regulations.

§ 61.71 State and Tribal government consultation.

Upon request of a State or tribal governing body, the Director shall make available Commission staff to discuss with representatives of the State or tribal governing body information submitted by the applicant, applicable Commission regulations, licensing procedures, potential schedules, and the type and scope of State activities in the license review permitted by law. In addition, staff shall be made available to consult and cooperate with the State or tribal governing body in developing proposals for participation in the license review.

§ 61.72 Filing of proposals for State and Tribal participation.

(a) A State or tribal governing body whose interest is affected by a near-surface disposal facility at the proposed site may submit to the Director a proposal for participation in the review of a license application. Proposals must be submitted within the following time periods:

(1) For the State in which the disposal facility will be located, or any State that is member of an interstate compact that includes the State in which the disposal facility is located, no later than 45 days following publication in the **Federal Register** of the notice of tendering of an application submitted under § 61.20.

(2) For any other State, or for a tribal governing body, no later than 120 days following publication in the **Federal Register** of the notice of tendering of an application submitted under § 61.20.

(b) Proposals for participation in the licensing process must be made in writing and must be signed by the Governor of the State or the official otherwise provided for by State or tribal law.

(c) At a minimum, proposals must contain each of the following items of information:

(1) A general description of how the State or tribe wishes to participate in the licensing process specifically identifying those issues it wishes to review.

(2) A description of material and information which the State or tribe plans to submit to the Commission for consideration in the licensing process. A tentative schedule referencing steps in the review and calendar dates for planned submittals should be included.

(3) A description of any work that the State or tribe proposes to perform for the Commission in support of the licensing process.

(4) A description of State or tribal plans to facilitate local government and citizen participation.

(5) A preliminary estimate of the types and extent of impacts which the State expects, should a disposal facility be located as proposed.

(6) If desired, any requests for educational or information services (seminars, public meetings) or other

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actions from the Commission such as establishment of additional Public Document Rooms or exchange of State personnel under the Intergovernmental Personnel Act.

§ 61.73 Commission approval of proposals.

(a) Upon receipt of a proposal submitted in accordance with § 61.72, the Director shall arrange for a meeting between the representatives of the State or tribal governing body and the Commission staff to discuss the proposal and to ensure full and effective participation by the State or tribe in the Commission's license review.

(b) If requested by a State or tribal governing body, the Director may approve all or any part of a proposal if the Director determines that:

(1) The proposed activities are within the scope of Commission statutory responsibility and the type and magnitude of impacts which the State or tribe may bear are sufficient to justify their participation; and

(2) The proposed activities will contribute productively to the licensing review.

(c) The decision of the Director will be transmitted in writing to the governor or the designated official of the tribal governing body.

(d) Participation by a State or Indian tribe shall not affect their rights to participate in an adjudicatory hearing as provided by Part 2 of this chapter.

Subpart G—Records, Reports, Tests, and Inspections

§ 61.80 Maintenance of records, reports, and transfers.

(a) Each licensee shall maintain any records and make any reports in connection with the licensed activities as may be required by the conditions of the license or by the rules, regulations, and orders of the Commission.

(b) Records which are required by the regulations in this part or by license conditions must be maintained for a period specified by the appropriate regulations in this chapter or by license condition. If a retention period is not otherwise specified, these records must be maintained and transferred to the officials specified in paragraph (e) of this section as a condition of license termination unless the Commission otherwise authorizes their disposition.

(c) Records which must be maintained pursuant to this part may be the original or a reproduced copy or microfilm if this reproduced copy or microfilm is capable of producing copy that is clear and legible at the end of the required retention period.

(d) If there is a conflict between the Commission's regulations in this part, license condition, or other written Commission approval or authorization pertaining to the retention period for the same type of record, the longest retention period specified takes precedence.

(e) Notwithstanding paragraphs (a) through (d) of this section, copies of records of the location and the quantity of radioactive wastes contained in the disposal site must be transferred upon license termination to the chief executive of the nearest municipality, the chief executive of the county in which the facility is located, the county zoning board or land development and planning agency, the State governor and other State, local and Federal governmental agencies as designated by the Commission at the time of license termination.

(f) Following receipt and acceptance of a shipment of radioactive waste, the licensee shall record the date of disposal of the waste, the location in the disposal site, the condition of the waste packages as received, any discrepancies between materials listed on the manifest and those received, and any evidence of leaking or damaged packages or radiation or contamination levels in excess of limits specified in Department of Transportation and Commission regulations. The licensee shall briefly describe any repackaging operations of any of the waste packages included in the shipment, plus any other information required by the Commission as a license condition.

(g) Each licensee shall comply with the safeguards reporting requirements of §§ 30.55, 40.64, 70.53 and 70.54 of this chapter if the quantities or activities of materials received or transferred exceed the limits of these sections. Inventory reports required by these sections are not required for materials after disposal.

(h) Each licensee authorized to dispose of radioactive waste received from other persons shall file a copy of its financial report or a certified financial statement annually with the Commission in order to update the information base for determining financial qualifications.

(i)(1) Each licensee authorized to dispose of waste materials received from other persons, pursuant to this part, shall submit annual reports to the appropriate Commission regional office shown in Appendix D of Part 20 of this chapter, with copies to the Director of the Office of Inspection and Enforcement and the Director of the Division of Waste Management, USNRC, Washington, D.C., 20555. Reports shall be submitted by the end of the first calendar quarter of each year for the preceding year; (2) The reports shall include (i) specification of the quantity of each of the principal radionuclides released to unrestricted areas in liquid and in airborne effluents during the preceding year, (ii) the results of the environmental monitoring program, (iii) a summary of licensee disposal unit survey and maintenance activities, (iv) a summary, by waste class, of activities and quantities of radionuclides disposed of, (v) any instances in which observed site characteristics were significantly different from those described in the application for a license; and (vi) any other information the Commission may require. If the quantities of radioactive materials released during the reporting period, monitoring results, or maintenance performed are significantly different from those expected in the materials previously reviewed as part of the licensing action, the report must cover this specifically.

(j) Each licensee shall report in accordance with the requirements of § 70.52 of this chapter.

(k) Any transfer of byproduct, source, and special nuclear materials by the licensee is subject to the requirements in §§ 30.41, 40.51, and 70.42 of this chapter. Byproduct, source and special nuclear material means materials as defined in these parts, respectively.

§ 61.81 Tests at land disposal facilities.

(a) Each licensee shall perform, or permit the Commission to perform, any tests as the Commission deems appropriate or necessary for the administration of the regulations in this part, including tests of:

(1) Radioactive wastes and facilities used for the receipt, storage, treatment, handling and disposal of radioactive wastes.

(2) Radiation detection and monitoring instruments; and

(3) Other equipment and devices used in connection with the receipt, possession, handling, treatment, storage, or disposal of radioactive waste.

(b) [Reserved]

§ 61.82 Commission inspections of land disposal facilities.

(a) Each licensee shall afford to the Commission at all reasonable times opportunity to inspect radioactive waste not yet disposed of, and the premises, equipment, operations, and facilities in which radioactive wastes are received, possessed, handled, treated, stored, or disposed of.

(b) Each licensee shall make available to the Commission for inspection, upon

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reasonable notice, records kept by it pursuant to the regulations in this chapter. Authorized representatives of the Commission may copy and take away copies of, for the Commission's use, any record required to be kept pursuant to this part.

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§ 61.83 Violations.

An injunction or other court order may be obtained prohibiting any violation of any provision of the Atomic Energy Act of 1954, as amended, or any regulation or order issued thereunder. A court order may be obtained for the payment of a civil penalty imposed pursuant to section 234 of the Act for violation of section 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, or 109 of the Act, or section 206 of the Energy Reorganization Act of 1974, or any rule.

The following amendments are also made to existing parts of the regulations in this chapter.

UNITED STATES NUCLEAR REGULATORY COMMISSION

RULES and REGULATIONS

TITLE 10, CHAPTER 1, CODE OF FEDERAL REGULATIONS—ENERGY

PART 61

MANAGEMENT AND DISPOSAL OF LOW-LEVEL WASTES BY SHALLOW LAND BURIAL AND ALTERNATIVE DISPOSAL METHODS

PROPOSED RULE MAKING

≫50 FR 23960
Published 6/7/85
Comment period expires 10/7/85.

Financial Responsibility Requirements Applicable to NRC Licensees for Cleanup of Accidental and Unexpected Releases of Radioactive Materials

See Part 30 Proposed Rulemaking

PART 61

LICENSING REQUIREMENTS FOR LAND DISPOSAL OF RADIOACTIVE WASTE

PETITIONS FOR RULE MAKING

≫ 50 FR 20306
Published 5/15/85

Natural Resources Defense Council, Inc.; Action on Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Denial of petition for rulemaking.

SUMMARY: The Nuclear Regulatory Commission (NRC) is denying a petition for rulemaking submitted by the Natural Resources Defense Council, Inc. The petitioners requested that the Commission adopt interim regulations for shallow land disposal of low-level radioactive waste. The petition is being denied on the grounds that the promulgation of the final rule creating 10 CFR Part 61 (entitled "Licensing Requirements for Land Disposal of Radioactive Waste") provides the means of ensuring consistent and safe practices for near-surface disposal of radioactive wastes. Thus, the seven issues raised in the petition were encompassed in the Part 61 requirements.

ADDRESSES: Copies of correspondence and documents cited below are available for public inspection at the NRC's Public Document Room at 1717 H Street, NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Kenneth C. Jackson, Sr. Section Leader, Low-Level Waste and Uranium Recovery Projects Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Telephone: 301–427–4500.

SUPPLEMENTARY INFORMATION:

I. Background

On August 6, 1976, Richard Cotton and Terry Lash submitted to the Commission a petition for rulemaking on behalf of the Natural Resources Defense Council, Inc. A notice of receipt of the petition for rulemaking was published in the **Federal Register** on September 23, 1976 (41 FR 41759). The petitioners requested that the Commission adopt the following provisions as interim standards for shallow land disposal of low-level radioactive wastes.

A. Long-Lived, Transuranic-Contaminated Wastes

1. The transfer of regulatory authority over long-lived transuranic wastes from the states to NRC.

2. An immediate end to burial of long-lived transuranic wastes with only retrievable storage permitted.

3. Payment of fees by persons that produce transuranic wastes to finance adequately safe permanent disposal.

4. Establishment of a reporting and inspection system operated by NRC (with on-site, unannounced inspection by NRC inspectors) to assure accurate classification of transuranic wastes.

B. Other Low-Level Radioactive Wastes

5. The suspension of licensing of new or enlarged burial sites until NRC establishes site selection criteria, radioactive release standards setting maximum permissible migration rates for radionuclides away from disposal sites, minimum standards for environmental monitoring programs, and standards for long-term care with mechanisms to finance sure care.

6. Establishment of minimum fees to be paid effective immediately for each cubic foot of waste buried at existing sites to assure adequate funds for long-term care.

C. Solidification of Low-Level Radioactive Wastes Before Shipment

7. The solidification of all radioactive wastes before shipment to reduce the potential for release to the environment either through accident or sabotage.

In an accompanying document (entitled "Memorandum of Points and Authorities in Support of the Natural Resources Defense Council's Petition for Rulemaking and Request for a Programmatic Environmental Impact Statement"), the petitioners also requested that the Commission undertake the preparation of a programmatic generic environmental impact statement (GEIS) on low-level waste disposal.

II. Partial Denial of Petition

Following an analysis by the NRC staff of the issues and points raised by the petition and of the comments received in response to the filing of the petition, the NRC published a partial denial of the petition; specifically, the request for the preparation of a separate programmatic GEIS on the grounds that the Commission believed that a separate GEIS for low-level waste disposal was neither required by the National Environmental Policy Act of 1969 (NEPA) nor necessary for the development of the NRC program. This denial was included in a **Federal Register** notice that was published on July 25, 1979 (44 FR 43541) and included a lengthy discussion of the petition, the public comments received on the petition, the NRC staff position on the petition, and a discussion of the regulations development program which the NRC staff had begun in 1977. The NRC staff indicated that when complete, the regulations under development would address the issues of disposal site selection, financing arrangements for closure and long-term maintenance and surveillance of disposal sites, waste form and classification, and waste disposal alternatives.

III. Development of 10 CFR Part 61

The regulations that the NRC staff had under development became the new 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste." Part 61 includes licensing procedures, performance objectives and technical requirements for land disposal of radioactive waste. The Draft Environmental Impact Statement was published on October 22, 1981 (46 FR 51776) following the publication of the

notice of proposed rulemaking for Part 61 on July 24, 1981 (46 FR 38081). Following the NRC staff's evaluation of a broad range of public comments, the final EIS was published on November 26, 1982 (47 FR 53829) and the final rule for Part 61 was published on December 27, 1982 (47 FR 57446).

Part 61 establishes a classification scheme which divides waste intended for land disposal into three classes based on radiological hazard: Class A, B, and C. Class A waste contains the lowest concentrations of radionuclides and must meet only minimum waste form requirements. Class B and Class C wastes contain higher concentrations and must meet both the minimum and stability waste form requirements. Additionally, Class C waste must be disposed of by the disposal site operator using methods that provide additional protection against inadvertent intrusion.

IV. Resolution of Petition Issues in 10 CFR Part 61

Issue 1. The transfer of regulatory authority over long-lived transuranic wastes from the states to NRC.

Part 61: Agreement States have made changes in their license conditions for the operating commercial disposal sites to effect compatibility with Part 61 (See § 61.2, Definitions; Subpart C, Performance Objectives; Subpart D, Technical Requirements for Land Disposal Facilities; portions of Subpart B necessary to implement Subparts C and D; § 20.311, Transfer for Disposal and manifests; and that portion of Subpart E requiring closure funding arrangements). See issue 2, below, regarding transuranic waste disposal.

Issue 2. An immediate end to burial of long-lived transuranic wastes with only retrievable storage permitted.

Part 61: The Part 61 classification system (§ 61.55) limits the disposal of long-lived transuranic contaminated waste to 100 nanocuries per gram (Class C maximum concentration). Wastes exceeding Class C are currently being stored by waste generators at their sites.

The NRC staff is currently developing criteria for evaluating disposal of waste which exceeds Class C concentrations. The results of the criteria development will help accomplish two objectives: Expansion of the 10 CFR Part 61 impact analysis methodology (on a generic rather than site-specific basis) and provision for supporting information for case-by-case evaluations of the impacts of individual waste and variations on disposal methods. The methodology will also enable a limited independent check of site-specific proposals. Efforts to define requirements for disposal of waste that exceed Class C concentrations are expected to take several years. However, the staff believes that generic guidance for evaluating disposal requests for a wide spectrum of these wastes will be available by mid-1985.

Issue 3. Payment of fees by persons that produce transuranic wastes to finance adequately safe permanent disposal.

Part 61: Subpart E, Financial Assurances, § 61.61—Each applicant for a disposal site license shall show that it possesses the necessary funds to cover the estimated costs of conducting all licensed activities; § 61.62—Applicants shall provide assurance of funds to carry out disposal site closure and stabilization; and § 61.63—Applicants shall provide assurances that arrangements are in place to provide sufficient funds to cover the cost of monitoring and any required maintenance during the institutional control period (i.e., up to 100 years).

Radioactive waste which exceeds the Class C concentration limits is not generally acceptable for near-surface disposal (in the case of transuranic waste, the Class C upper limit is 100 nanocuries per gram of waste). However, the Commission may, upon request or its own initiative, authorize other provisions for the classification and characteristics of waste on a specific basis, if, after evaluation of the specific characteristics of the waste, disposal site, and method of disposal, it finds reasonable assurance of compliance with the Part 61 performance objectives (see § 61.58).

The matter of special fees being charged to waste generators for disposal of above Class C wastes is currently moot since, in the absence of a repository or other method for disposal, these wastes are currently being stored by the waste generators. When these facilities become available, the matter of fees will be considered.

Issue 4. Establishment of a reporting and inspection system operated by NRC (with on-site, unannounced inspection by NRC inspectors) to assure adequate classification of transuranic waste.

Part 61: Subpart G, Records, Reports, Tests, and Inspections, §§ 61.80, 61.81, 61.82, and 61.83—The commercial operating disposal sites are all under Agreement State jurisdiction, and requirements compatible to Subpart G are required by license conditions at the sites.

Issue 5. The suspension of licensing of new or enlarged sites until NRC establishes site selection criteria, radioactive release standards setting maximum permissible migration rates for radionuclides away from disposal sites, minimum standards for environmental monitoring programs, and standards for long-term care with mechanisms to finance such care.

Part 61: Subpart D, Technical-Requirements for Land Disposal Facilities—§ 61.50 specifies the minimum characteristics a disposal site must have to be acceptable for use as a near-surface disposal facility; § 61.53 (b), (c), and (d) require a licensee to have plans for corrective measures if migration of radionuclides would indicate that the performance objectives of Subpart C may not be met, require maintenance of a monitoring program during the disposal facility construction and operation, and requires maintenance of a monitoring system after disposal site closure based on the operating history and the closure and stabilization experience of the disposal site; also Subpart C, § 61.41 provides limits for annual dose rates to members of the public from releases of radioactive material to the general environment. The requirements of Subpart E, Financial Assurances, are discussed under Issue 3.

Issue 6. Establishment of minimum fees to be paid effective immediately for each cubic foot of waste buried at existing sites to assure adequate funds for long-term care.

Part 61: Subpart E, Financial assurances, is not incombent on the existing sites, since they operate under Agreement State regulations. However, the Agreement States routinely assess a charge for waste disposal which is placed in a fund to finance long-term care of the site.

Issue 7. The solidification of all radioactive wastes before shipment to reduce the potential for release to the environment either through accident or sabotage.

Part 61: Subpart D, § 61.56, paragraphs (a)(2) and (b)(2) assure that wastes will not be shipped as liquids.

The foregoing discussion of NRC actions, coupled with the earlier partial denial of the NRDC petition, completes the NRC's response to this NRDC petition. The Commission believes that implementation of 10 CFR Part 61 provides the means of ensuring consistent and safe practices for near-surface disposal of wastes. Accordingly, the petition is denied.

Dated at Bethesda, Maryland this 29th day of March, 1985.

For the Nuclear Regulatory Commission.

William J. Dircks,

Executive Director for Operations.

PART 61

LICENSING REQUIREMENTS FOR LAND DISPOSAL OF RADIOACTIVE WASTE

STATEMENTS OF CONSIDERATION

47 FR 57446
Published 12/27/82
Effective dates:
10 CFR 20.311 of Part 20 effective date is 12/27/83; 10 CFR Part 61 and all other changes effective 1/26/83.

10 CFR Parts 2, 19, 20, 21, 30, 40, 51, 61, 70, 73 and 170

Licensing Requirements for Land Disposal of Radioactive Waste

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is issuing regulations that set out licensing procedures, performance objectives and technical requirements for the licensing of facilities for the land disposal of low-level radioactive waste. The regulation is necessary to provide comprehensive national criteria applicable to the land disposal of radioactive waste. This action is taken in response to the needs and requests of the public, Congress, industry, the states, the Commission, and other Federal agencies for codified regulations to govern the disposal of low-level radioactive waste.

DATES: 10 CFR 20.311 of Part 20 effective date is December 27, 1983; 10 CFR Part 61 and all other changes effective January 26, 1983.

ADDRESSES: Documents referred to in this regulation may be examined at the Commission's Public Document Room, 1717 H Street NW., Washington, DC. Copies of NUREG's may be obtained by writing the Superintendent of Documents, U.S. Government Printing Office, CIB, SSOS, UCP, Washington, DC 20401 or the NRC/GPO Sales Program, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Copies of Branch Technical Positions may be obtained from the Low Level Waste Licensing Branch, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

FOR FURTHER INFORMATION CONTACT: Paul H. Lohaus, Low-Level Waste Licensing Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301)427–4500.

SUPPLEMENTARY INFORMATION:

Introduction

The NRC is amending its regulations to provide specific requirements for licensing the land disposal of low level radioactive wastes containing source, special nuclear, or byproduct material. The amendments provide licensing procedures, performance objectives, and technical criteria for licensing facilities for the land disposal of radioactive waste. Specifically, the regulations establish performance objectives for land disposal of waste; technical requirements for the siting, design, operations, and closure activities for a near-surface disposal facility; technical requirements concerning the waste form that waste generators must meet for the land disposal of waste; classification of waste; institutional requirements; and administrative and procedural requirements for licensing a disposal facility. Amendments to other parts are established to govern the certification and use of shipping manifests to track waste shipments and clarify, but not substantially modify, the requirements of existing regulations. Provisions for consultation and participation in license reviews by State governments and Indian tribes are also included. Specific requirements for licensing facilities for the disposal of radioactive wastes other than high level waste by alternative land disposal methods will be proposed in subsequent rulemakings. Disposal of radioactive wastes by an individual licensee will continue to be governed by 10 CFR Part 20.

Background

On October 25, 1978, the Commission published an Advance Notice of Proposed Rulemaking (43 FR 49811) regarding the development of specific regulations for the disposal of low-level radioactive wastes (LLW). The development of these regulations was in response to needs and requests expressed by the public, the Congress, industry, the States, the Commission, and other Federal agencies for codification of regulations for the disposal of LLW. The respondents to the advance notice strongly supported the Commission's development of specific criteria and standards for the disposal of low-level waste. The comments received by the Commission on the advance notice were used by the Commission in scoping the form and content of the draft Environmental Impact Statement (EIS) (NUREG–0782) and the regulation.

On February 28, 1980, the Commission also published a Notice of Availability of a preliminary draft regulation, dated November 5, 1979, announcing availability of the draft for public review and comment (45 FR 13104). This was done to help ensure wide distribution and early public review and comment on the development of the rule. Copies of this draft regulation were distributed to all of the States.

During the summer and fall of 1980, the Commission also sponsored four regional workshops to provide an

opportunity for open dialogue among representatives of the States, public interest groups, industry, and others on the issues to be addressed in the Part 61 rulemaking. These workshops were particularly useful in formulating our positions on the more judgmental aspects of the rule and underlying assumptions (such as the length of time we should assume that active governmental controls could reasonably be relied on).

Proposed 10 CFR Part 61 and conforming amendments were published on July 24, 1981 (46 FR 38081). The original comment period was due to expire October 22, 1981, but was extended to January 14, 1982 to coincide with the 90-day comment period for the supporting draft EIS (NUREG–0782). The availability of the draft EIS was announced on October 22, 1981 (46 FR 51776). The proposed rule was sent to all Commission licensees and copies were provided to Agreement State officials to distribute to their licensees.

Public comments were received on both the rule and draft EIS and may be examined at the Commission's Public Document Room (PDR) located at 1717 H Street NW., Washington, D.C. Comments on the rule are available at the PDR Docket No. PR–2 *et al.* (46 FR 38081). Comments on the draft EIS are available at the PDR referencing Docket No. PR–61 (46 FR 51776).

A total of 42 persons commented on the draft EIS. These commenters represented a variety of interests. Comments were received from 21 States, 8 industry/utilities, 8 Federal agencies/laboratories, 3 individuals and 2 broker/disposal firms. The comments generally raised or echoed the same issues raised concerning the rule except that some questions on the methodologies and presentation of results were raised. A detailed analysis of the comments on the draft EIS will be included as an appendix to the final EIS (NUREG–0945) which is being prepared[1]

Overview of Comments on 10 CFR Part 61

A total of 107 different persons submitted comments on the proposed 10 CFR Part 61. The commenters represented a variety in interests. Comments were received from: 19 industrial groups, 17 state groups, 15 individuals, 13 utilities, 9 federal agencies or laboratories, 6 universities, 4 medical groups, 4 engineering firms, 4 public interest groups, 4 professional organizations, 3 broker/disposal firms, 2 legal groups, 2 surety groups, and 5 others. Commenters offered from one to over 20 comments each. The topics addressed a wide range of issues and all parts of the rule.

The general response was quite favorable. Almost half (47) expressed explicit support of the rule or overall approach. Many of these commenters expressed some concern about one or a few specific provisions and most offered suggestions for improvements. Many expressed the view that the rule provides a needed and adequate framework for establishing additional low-level waste disposal capacity. The importance, reasonableness, and clarity of the rule were noted. Support was expressed by almost every sector.

Only 15 commenters expressed any outright opposition to the rule or some significant portion of the rule. Most were individuals. No state group or current disposal site operator expressed opposition. The opposition expressed appeared to stem from objections to nuclear power and use of radioactive materials, opposition to shallow land burial as a disposal method in general and for TRU wastes in particular, opposition to perceived increase in costs to waste generators, the regulatory burden of the licensing process, and the technical requirements in Subpart D of the proposed rule. Several of the commenters that expressed opposition offered suggestions for improving the rule, however.

Most of the remaining commenters (45) offered constructive comments without taking a general position on the rule, or offered support with reservations about one or more aspects of the rule.

All concerns expressed by all commenters are discussed in detail in a staff analysis of comments which is available in the PDR. Because the volume of comments and analysis in detail occupy several hundred pages, the following discussion summarizes and responds to all comments of major and generic significance. For example, comments on Part 61 standard provisions that are common to all Commission regulations are not discussed in this summary, but are covered in the document available in the PDR.

Summary of Comments for Proposed Part 61

Subpart A: General Provisions. A variety of comments were received that related to the scope of the rule. Two clarifying changes were made to make it clearer that uranium and thorium tailings as defined in Section 11e(2) of the Atomic Energy Act of 1954, as amended, are not subject to the requirements of Part 61, but are disposed of according to requirements in 10 CFR Part 40. In addition, clarifying changes were made to state that the requirements of Part 61 do not apply to persons who are licensed by an Agreement State pursuant to authority relinquished to that State by the Commission in accordance with Section 274 of the Atomic Energy Act of 1954, as amended.

Some commenters felt that provisions should be made for an individual to dispose of his or her own waste. Private waste disposal may be licensed under current provisions of 10 CFR Part 20. The Commission feels that these provisions are adequate and that no change to Part 61 to accommodate private disposal is warranted.

At least two State commenters asked about Agreement State requirements being compatible with Part 61. The Commission is preparing guidance for States that will consider Section 61.2, Definitions; Subpart C, Performance Objectives; Subpart D, Technical Requirements for Land Disposal Facilities; those portions of Subpart B that are necessary to implement the provisions of Subparts C and D; Section 20.311, Transfer for disposal and manifests; and that portion of Subpart E requiring closure funding arrangements as a matter of compatibility for the Agreement States. Guidance will identify those aspects where uniformity in desirable and those aspects where States would have flexibility in establishing their own requirements.

It was suggested that construction of a disposal facility should be permitted to begin before a license is issued. The Commission believes that to do so would have a detrimental effect on the decisionmaking process and therefore no change is being made to this provision.

In the proposed rule, near surface disposal was defined in § 61.2 and discussed in § 61.7 as disposal in the upper 15–20 meters of the earth's surface. Based on comments received, the wording could be misinterpreted to mean that disposal was allowed only between 15 and 20 meters or that deeper disposal was prohibited. The wording was clarified to make it consistent with the waste classification requirements. (Class A and B wastes have no minimum depth requirement and Class C wastes have a 5 meter depth requirement when relying on depth alone.) Disposal at a depth greater than 5 meters would also be acceptable.

Subpart B: Licenses. Comments received on Subpart B covered a wide range of issues. Many were concerned

[1] Copies of this report may be obtained by written request to the Division of Technical Information and Document Control, Washington, D.C. 20555. Copies will also be made available for inspection or copying for a fee at the NRC Public Document Room, 1717 H Street NW., Washington, D.C.

with clarification and intent. There were, however, several issues that were more substantive and addressed by a large group of commenters.

Several commenters were concerned that the language in several places required the applicant to demonstrate in the application that certain objectives were met. Their concerns were over what would constitute a demonstration, and the impossibility of meeting an objective with complete certainty as implied by the language in the rule. The Commission agrees with these commenters and changes have been made in appropriate places to indicate that what the Commission wants is information or analyses that will provide reasonable assurance that the objective or requirement will be met. Other minor changes were made for purposes of clarification.

An advisory statement in § 61.13 that the ground water pathway was generally the most significant for near surface disposal, in terms of releases of radioactivity, was deleted. This section requires an analysis of all potential pathways and two commentators objected to singling out ground water.

Several commenters expressed concern over the length of time that the licensing process might take and suggested limits be established in the regulations. The Commission does not believe that this is practicable, considering the uncertainties in predicting the quality of future applications, the availability of staff resources at critical times, and the potential for hearings. The licensing process must be in accordance with the Commission's mission to protect public health and safety but the Commission does agree that the licensing process must be carried out in the minimum amount of time consistent with this mission. Some changes in the procedural aspects of the rule are being made with this in mind (see comments, Subpart F). The Commission staff is developing technical positions to assist applicants in preparing their applications and is developing performance assessment capabilities that will enable the staff to perform timely reviews.

Nine commenters addressed the language in § 61.25 that prevents the licensee from making any changes in the facility or procedures described in the application except as provided for in specific license conditions. The commenters felt that this was unnecessarily restrictive, in that there may be aspects of the facility or procedures that were described in the application, but which are not important to public health and safety and the licensee should be free to change them. The Commission agrees, since it was not intended that all changes be subject to Commission review or approval, only those important to public health and safety. Section 61.25 is changed accordingly.

Over a dozen commenters raised objections to the requirement that the license be renewed on the usual five-year interval with a concomitant public notice on the opportunity to request a public hearing. The dominant reason for these objections is the burden that is perceived if public hearings were held every five years at the time of license renewal. The Commission believes that a periodic reassessment by the licensee and the Commission staff is necessary. This reassessment should factor in the past operating experiences of the disposal facility, the results of monitoring data, changing economic conditions that might affect financial assurances, advances in technology, etc. While there are alternatives to license renewal in order to ensure these periodic reappraisals, the Commission has found through its experience that periodic license renewal is the most effective method. As for the public notice of the renewal and the notice of opportunity to request a public hearing, the Commission agrees that this is not necessary and it has been deleted. Deleting this requirement will not have an adverse effect on the public's interest and rights. According to revised § 61.25, any changes to the license conditions from a license renewal process would be subject to notice and opportunity to request hearings if the conditions were in the highest category specified in that section (paragraph 61.25(a)(1)).

Two commenters suggested not subjecting the licensee to an opportunity for hearings at the time of site closure. The Commission believes that this is an important and worthwhile time to provide for public participation. No changes were made.

While none of the commenters took exception with the need for a period of post-closure observation and maintenance by the licensee, a number did object to the open-endedness of the requirements that this period be for "a minimum of five years." This provision has been changed to state that the period will normally be five years, but that shorter or longer periods may be approved by the Commission in connection with the approval of the site closure plan for a specific site.

Several commenters, including Chem-Nuclear Systems, Inc., and U.S. Ecology, the operators of the existing disposal facilities, were concerned about possible delays in transfer of the license to the site owner at the end of the post-closure observation period. They foresee the possibility of more stringent requirements being imposed at this time, thereby delaying the transfer with an adverse effect on the ability of the licensee to effect proper closure due to changes beyond the financial requirements initially established. The Commission recognizes this possibility, but it is beyond the Commission's authority to control or regulate the site owner and force the transfer to take place. Any requirements for transfer that are outside the public health and safety considerations prescribed by Part 61 became a matter of contract or agreement between the site owner and the site operator. With the Low Level Radioactive Waste Policy Act laying the responsibility for disposal of low level waste on the States, it is obvious that the States will play an increasingly important role. State authorities, who in all likelihood will be the site owners, should become active participants in the disposal activities from the earliest stages of development through site closure and stabilization so that at the time of site transfer to them for institutional control, there are no unforeseen obstacles to the orderly and timely transfer. Part 61 provides for this participation in the licensing process, and as landlord, there are other avenues of participation.

Subpart C: Performance Objectives. A dozen commenters addressed the approach taken in Part 61 to establish performance objectives supplemented by some minimum technical requirements. All commenters except three supported the approach of addressing disposal from an overall systems standpoint, i.e., establishing overall performance objectives and minimum technical requirements and leaving considerable flexibility on how an applicant or licensee would design and operate a site. Of the three who disagreed, one felt that the concern for public health and safety is so great that the rule should be based on prescriptive requirements; one felt that there should be no technical requirements in the rule, only performance objectives; and the third felt that the rule is restrictive by establishing both performance objectives and technical requirements. On balance, the comments were judged to be supportive of the mix of objectives and requirements and no changes have been made in this regard.

One commenter challenged the performance objectives in Part 61 as being premature in advance of relevant EPA standards and beyond the agency's authority to the extent that they are not already embodied in 10 CFR Part 20 and

that they are unduly stringent and unsupported. With respect to this comment, EPA, under its ambient environmental standards setting authority assigned by Reorganization Plan No. 3 of 1970 has the authority to prepare a standard that will set limits for releases of radioactivity to the general environment from disposal facilities. Presently there is no such EPA standard. In the absence of such a standard, the Commission examined a range of limits which bound that expected for the EPA standard and selected a proposed performance objective that establishes a release limit for the site boundary, a regulatory action within the limits of NRC authority. In a rulemaking action, the Commission is not solely limited to existing standards in Part 20 and the Commission does not intend to withdraw any portion of the rule that may be related to the performance objectives.

With regard to the specific performance objective for releases to the environment, the Environmental Protection Agency commented that the establishment of an individual exposure limit at the site boundary for releases as proposed in § 61.41 is appropriate. They stated that the range of 1 to 25 mrem/yr analyzed by the Commission was a reasonable range that should encompass any standard which EPA might derive for low level waste disposal facilities. Based on the Commission's analysis, NRC does not anticipate any need to change the technical requirements of Part 61 to meet a future EPA standard. In their comments, EPA stated their opinion that it was inappropriate to apply the EPA drinking water standard as proposed in § 61.41. Accordingly, this part of the performance objective has been deleted. However, this does not diminish the Commission's concern over protecting sources of drinking water. The Commission will assess the potential impact on drinking water supplies as part of its licensing review.

Reaction to the proposed performance objective to protect potential inadvertent intruders was mixed. There were some who felt the proposed 500 mrem whole body dose to the intruder was too high, some felt that it was the right value for a standard, and others felt that higher values were in order. Those that felt that the standard should be higher suggested values of 5 rem or 25 rem (the Department of Energy) to correspond to limits for occupational exposure or one-time exposures to workers from potential accidents. A number of commenters, in their comments about considering the probability that intrusion will occur, expressed concern about weighting too heavily the protection against inadvertent intrusion in determining disposal requirements for waste. Based on these comments, the Commission believes that the primary concern of those who feel that the intruder protection objective is too restrictive is the effect that this has on the concentrations of certain nuclides that are acceptable for disposal in a near surface facility and the need to meet additional requirements such as stability for some wastes. With this in mind, and in response to other comments, the Commission has reevaluated the calculations that establish the waste classification concentration limits to eliminate unnecessarily conservative assumptions with the result that the analysis is more realistic and the limits for several important isotopes have been raised. With this action, the Commission believes that most of the concerns of those who encouraged higher exposure limits or less emphasis on protection of intruders will have been met.

With respect to those who suggested that lower limits would be appropriate, there were no compelling arguments or technical demonstrations presented that persuaded the Commission to lower the dose limit for intruders.

The EPA recommended that the 500 mrem dose limit be deleted from the performance objective, since the licensee would not be able to monitor or demostrate compliance with a specific dose limit that applies to an event that might occur hundreds of years from now. They did recommend use of the 500 mrem whole body dose limit coupled with ALARA as the basis for determining the concentration limits in Table 1 of Part 61. The 500 mrem dose limit has been deleted from the performance objective but retained as the basis of the waste classification limits.

Comments were offered that more emphasis should be placed on requirements, such as the use of durable monuments to warn potential intruders. This concept is incorporated in the regulation.

Acts of terrorism and sabotage were identified as possible intrusion problems and suggestions were made for protecting against such acts. The Commission does not feel that the likelihood of such events or the magnitude of the effects of such acts are sufficient to warrant requirements in this regard.

EPA asked for a clarification of the intent of the performance objective in § 61.43 as it pertains to effluents from the site. This performance objective states that operations at the land disposal facility must be conducted in compliance with the standards for radiation protection set out in Part 20. Part 20 contains standards for concentrations of radioisotopes in air and water released from a licensed facility. Section 61.41 sets forth limits on concentrations of radioisotopes released from a land disposal facility which are lower than those in Part 20. It is the Commission's intent that the provisions of Part 20 will apply to all aspects of radiation protection during operation except for releases of radioactivity from the site which will be governed by the more stringent requirements of § 61.41. The rule has been modified to clarify this point.

Commenters pointed out a need to be clearer in the rule on how the principle of maintaining radiation exposures to a level that is as low as reasonably achievable (ALARA) will be handled. The Commission intends that the ALARA principle apply to the performance objectives for long-term environmental release and protection of individuals during site operations. It cannot apply to the intruder performance objective, since Part 61 sets out the requirements for protection and intrusion which is beyond the disposal facility licensee's control. Appropriate changes have been made in §§ 61.41 and 61.43 to reflect the ALARA principle.

Subpart D: § 61.50, Disposal Site Suitability for Near-Surface Disposal. Approximately two dozen commenters offered comments on various aspects of § 61.50, addressing disposal site suitability requirements. These comments address eight subject areas which are discussed below.

Eight comments were received on the requirement that the disposal site shall be capable of being characterized, modeled, analyzed, and monitored. The comments were directed to the perceived vagueness of the requirement, i.e., what does it mean to be capable of being characterized, modeled, analyzed, and monitored? Some commenters offered suggested rewording or examples. The Commission has issued a staff technical position (NUREG–0902) that provides interpretation and explanation of the meaning and intent of this requirement. In the technical position, it is explained that the site characteristics must be such that limited site characterization can adequately define the site characteristics spatially across the disposal site and that site characteristics should vary with a sufficiently narrow range so that the input to modeling is representative of the hydrogeologic units and the assumptions underlying the modeling

are valid. Further, natural processes affecting the disposal site should be occurring at a consistent and definable rate such that the modeling of the site will represent both present and anticipatable site conditions after closure. Finally, site characteristics must be such that a reasonable number of monitoring points can adequately describe the extent to which radionuclides have migrated from the waste disposal units. In addition, the Commission's staff is developing an in-house modeling capability and will share that capability through pre-qualification of prospective computer codes. The Commission believes that a concise statement in the rule along with guidance on these subjects provided by technical position papers and Regulatory Guides is appropriate.

Several aspects related to ground water were addressed in the comments. Three commenters (Ontario Hydro, the Department of Interior, and the Department of Energy) endorsed the provision in § 61.50(a)(7) that permits disposal below the water table where diffusion dominated the ground water flow system.

The Department of Interior recommended using the term, "molecular diffusion" and both they and Ontario Hydro suggested specifying a limit for soil hydraulic conductivity of less than 10^{-6} cm/sec, as appropriate. There were several commenters who disagreed with this provision and recommended total containment or some minimum depth to the water table.

The Commission envisions a site that would satisfy the exception in section 61.50(a)(7) as one with an inactive flow system so that the water which would contact the wastes would move on the order of less than one foot per year. Given the low hydraulic conductivity and effective porosity of the soils, very little water would actually contact the waste or flow from the disposal units. The travel time will result in sufficient reduction of concentration of the small amounts released and fine-grained soils will typically provide significant attenuation for most radionuclides. No change has been made to this provision of the rule.

Several commenters suggested requirements on retardation properties for soils, both impervious and porous. One suggested a leachate collection and treatment system for the impervious soils. The Commission does not consider it appropriate to set forth specific values for characteristics which promote attenuation of radionuclides. Whereas attenuation is advantageous for some radionuclides, others such as H-3, C-14, and I-129 may not be significantly attenuated. The Commission believes that reliance should be placed on siting requirements which will keep water away from wastes, result in low volumes of contaminated water being released, and provide a long travel time for decay. The Commission takes exception to any design which relies on a leachate collection and treatment system to reduce migration. Such a design is expected to result in a requirement for continued active site maintenance, therefore violating the performance objective in § 61.44.

Several comments recommended that the natural resources considered under § 61.50(a)(4) specifically include ground water and aquifers underlying the site and that the resources of significance were not limited to "economic" significance. Another suggested that the resources be "known" resources so that the applicant would not have to engage in an extensive exploration program to assure that there were no significant natural resources. The Commission considers ground water and aquifers to be natural resources in the context of this requirement. The Commission also agrees that it should not be necessary to conduct extensive exploration studies to prove that no resources exist. Several changes have been made in the sections relating to ground water to reflect these comments.

Commenters raised four questions on the siting requirements related to surface water drainage. These can be summarized as (1) definition of certain terms such as upstream drainage areas, coastal high-hazard area and wetland; (2) the adequacy of the exclusion of waste disposal based on the 100-year floodplain; (3) whether engineering drainage modifications can be made in order to meet the requirements; and (4) the vagueness of some terms.

With respect to the terms "coastal high-hazard area" and "wetland," these are defined in Executive Order 11988 (42 FR 26951, May 25, 1977), *Floodplain Management Guidelines* which is noted in the rule. The term "upstream drainage area" can be defined in conventional hydrologic terms as all the land surface which drains, either by channel flow or sheetwash, across the disposal facility.

The 100-year floodplain is that land which would be inundated by a flood having a 1 in 100 chance of occurring in any particular year. The Commission feels the major hazard due to flooding is associated with the period of site operations when disposal units are open. Because of other provisions of the rule, the disposal units will be open a comparatively short time. Once closed, the covers and site drainage system will provide protection against the effects of flooding. The Commission considers 300 or 500-year floodplains to be unnecessarily restrictive; and questions whether an adequate data base or standard methods of determining such floodplains exist.

The question on engineering modifications will be addressed more fully in staff technical positions related to site suitability, selection and characterization and to site design and operations. Engineering features may be used to improve site drainage and protect against flooding during operations.

With respect to the vagueness, or non-prescriptive, nature of the requirements, the Commission considers the siting requirements as site screening tools which will be met in most cases and which, if not met fully, would require a site-specific evaluation to determine whether an exemption is warranted. The Commission finds this preferable to treating more prescriptive siting requirements as exclusionary.

Minor changes of a clarifying nature have been made to the requirements related to flooding.

Several commenters suggested that radioactive waste disposal facilities could be colocated with hazardous waste disposal facilities. The Commission does not object to this as long as the facilities are separated from one another and the wastes are not commingled. The provisions of § 61.50 pertaining to nearby facilities not adversely impacting the ability of the site to meet the performance objectives or significantly masking the environmental monitoring program would have to be met.

Several commenters raised the question of relevance of seismic or volcanic hazards to low level waste disposal, given the orders of magnitude difference between the time frames for those geologic phenomena and the hazard of the low-level wastes. Concern was also expressed that certain areas, such as California, would have all potential sites eliminated by the requirement to avoid seismic areas.

The requirement, as written, provides the Commission a mechanism for site specific evaluation of such factors as recurrence intervals, probabilities, liquefaction potential, and ground accelerations to compare against a long-term (500-year) radiological hazard and the disposal requirements of Part 61. This minimum technical requirement would not arbitrarily eliminate potential sites so much as it would provide a site screening test which will be met in most cases and will mandate a thorough

evaluation of site performance in areas of known tectonic hazards.

Several persons commented on the reliability of long term projections of population growth. The Commission recognizes such projections have a degree of uncertainty. Part of the staff review of any projection focuses on this uncertainty and how it has been handled by the applicant. Previous experience with commercial low-level disposal sites illustrate that suitable sites can reasonably be found in areas of low population density and minimal population growth potential.

Two commenters suggested a siting requirement based on accessibility to major transportation routes. This issue becomes a consideration in site selection and the evaluation of alternatives required under NEPA and is not necessary in the rule.

Individual comments were received suggesting siting requirements related to mechanical and physical properties of soils to make them suitable for compaction and supporting construction equipment, and requirements to avoid areas of high natural radioactivity. Changes to the rule were not deemed necessary. The mechanical and physical characteristics of soils are factors to be addressed in the site design and operations in order to meet stabilization requirements and objectives. With respect to areas of high natural radioactivity, these areas would be excluded if they could be shown to violate the ability to carry out a monitoring program. Otherwise, the Commission sees no valid reason for excluding these areas.

Several commenters raised the general question of the length of time the various siting or design requirements have to be satisfied. Others requested that the design basis natural events or phenomena be identified and that the length of time for consideration associated with these be stated.

The siting, design, and waste form requirements relate to both stability of the disposal site and control of releases within acceptable limits. Reliance must be placed for a longer time on the site since the waste form and design features will decrease in effectiveness over time. Therefore, each of the siting requirements should be considered applicable over the indefinite future and should be evaluated for at least a 500-year time frame. A 500-year time frame for design basis natural events or phenomena should also be applied.

Subpart D: § 61.51, Disposal Site Design for Land Disposal. Five commenters objected to the absoluteness of the requirements in § 61.51 relative to preventing infiltration and eliminating the contact of water with waste. Comments were also expressed requesting preferential consideration be given to progressive slope design for burial and concern was expressed that the rule does not provide specific guidance for engineered features. Commenters also expressed concern that site areas used for disposal of Class A waste will require more maintenance.

The requirements referred to are expressed as design objectives. Given that these are design objectives, the actual achievement will be to minimize, rather than absolutely prevent or eliminate. The achievement level should be as near the design objectives as is practicable. The wording of these paragraphs has been changed to reflect this. With respect to progressive slope design for burial, the regulation does not specify the type of disposal unit. The site designer should give particular attention to the design of that portion of the facility used for the disposal of Class A wastes so that the inherently unstable Class A wastes will not interfere with the long-term stability of the site.

Four commenters recommended that warning signs or permanent identification monuments be employed as a deterrent to inadvertent intrusion. Several suggested a design lifetime of 500 years for such markers.

Although there are few "signs" in the traditional sense that have design lives approaching 500 years, the Commission would consider such things as granite monuments near the survey marker control points as an appropriate adjunct to the physical intruder barriers employed in the disposal of the waste. A change to the rule has been made to require such monuments at the time the license is terminated.

Subpart D: § 61.52, Land Disposal Facility Operation and Disposal Site Closure. There were several issues related to facility operation and site closure identified by about thirty commenters. A half dozen commenters raised questions with respect to the requirement that Class A waste be segregated from other classes of waste. Questions also addressed the need for segregation during transportation, the meaning and intent of the term "interaction," and the need for segregation in arid sites.

The intent of the rule is not to prohibit waste from more than one class from being shipped on the same transport vehicle. Consistent with appropriate transportation regulations, the Commission has no objection to commingling different classes of waste in transport.

In identifying the need to clarify the term "interaction," the commenters noted that it was vague and unenforceable, could include migration, and could be physical or chemical interaction.

The intent of the rule is to protect Class B and C wastes. Class A wastes could interact with other wastes directly through the release of absorbed liquids, solvents, or other mobile components that might be present in Class A waste. Indirect interaction could result from degradation of Class A waste and its lack of stability. Consolidation of Class A wastes would provide a less stable support which could contribute to failure of the disposal unit cover leading to increased precipitation infiltration and surface water intrusion. The degree to which these interactions could occur depends to a large extent on site specific characteristics and the Commission does not believe that it is appropriate to set a prescriptive requirement in this area in the rule. The wording of this requirement has been changed to define the purpose for the segregation and minimization of interaction between the segregated wastes. The rule also permits Class A waste that meets the stability requirements to be placed with Class B and C wastes.

The State of Washington regulates the disposal site located in an arid region near Richland, Washington. The State noted that without the likelihood of ground water or surface water being factors at arid sites, segregation of Class A wastes seems to be unnecessary. They also noted that commingling Class A and B wastes would dilute the Class B wastes and have potential benefit.

The State's observations may have merit for arid sites but are difficult to adopt in a rule that must address sites located in all parts of the country. The Commission anticipated the need to consider alternative disposal requirements and included § 61.54, "Alternative requirements for design and operations" to provide for consideration of such alternatives.

A number of commenters noted that factors other than waste form play a role in assuring the stability of the site. In the area of site operations, these factors are identified as the way in which waste is emplaced and the filling of voids in between waste packages after emplacement. Several pointed out the stability problems (slumping, etc.) that could still be associated with disposal units containing the segregated and unstable Class A waste. A number of commenters objected to the requirement that wastes must be emplaced in an orderly manner because of perceived increased exposures. The

requirement that was proposed in paragraph (4) of § 61.52(a) was intended to assure that the placement of packages into a disposal unit did not destroy the integrity of the package in order to minimize the possibility of releases of contamination, and also to minimize the void spaces between packages so that this would not be a contributor to site instability. It has been a common practice at waste disposal facilities to dump some wastes over the edge of a disposal trench with the packages falling and tumbling to the trench bottom where they ended up a random arrangement. This practice jeopardizes package integrity and does not permit access to voids between packages so that they could be backfilled. The assumption by the commenters that orderly emplacement necessitates increased handling by site operators with resultant higher radiation exposures is not necessarily the case. Lifting and stacking devices are currently in use for low level waste disposal that permit remote lifting and emplacement in the disposal trench without increased occupational exposure. The resulting emplacement meets the intent of protection of packaging integrity and access to void spaces. Since the term "orderly" was subject to misinterpretation, the requirement has been rewritten to remove the term and to specify the objectives of emplacement.

Six commenters addressed the requirement for maintaining a buffer zone of at least 100 feet. These comments generally supported the concept and purposes of a buffer zone, but questioned whether the specified 100 feet was sufficient. The Department of the Interior suggested that the buffer zone should be three dimensional to include some distance below the disposal site.

In response to these comments, the Commission has restated the requirement in terms of the objective to carry out monitoring activities and take mitigative measures if needed, and has made the buffer zone three dimensional.

Several persons commented on the need to conduct ancillary activities at the disposal facility such as storage, waste treatment, truck terminals, etc. Concern was expressed over the language in § 61.51(a)(7) that would seem to preclude such activities. Others felt that provisions should be made in Part 61 for the description and licensing of such activities.

The provision of § 61.51 that caused the concern was that the disposal site shall be used exclusively for the disposal of radioactive wastes. The intent of this provision was to prevent the disposal of wastes such as toxic or hazardous chemicals which do not contain radioactive material at the facility. It was not intended, as could easily be inferred from the way the requirement was worded, that disposal is the only activity that could take place. Corrective word changes have been made to clarify this. The purpose of Part 61 is to specify the regulatory requirements for the disposal of radioactive waste. Existing requirements in Parts 30, 40, 70, *et al.*, would govern the licensing of other activities involving licensed radioactive materials, such as waste treatment or storage.

Several comments questioned the meaning of the term "a few percent above background" as applied to the requirement that limits radiation levels at the surface of the disposal unit cover. Some suggested values from as low as 1 percent of background to as high as 1 mrem/hour (about 5,000 percent of background). One commenter suggested that the radiation limit should not be confined to gamma radiation, but should be expressed as a dose rate to include other types of radiation.

The rules in Part 20 contain provisions for premissible levels of radiation in unrestricted areas in § 20.105. The Commission considers these to be appropriate for application at the time that the disposal facility license is transferred to the site owner for the period of institutional control. Although access to the site will be controlled to prevent inadvertent intrusion and the site could be viewed as a restricted area, the Commission believes it is not proper to consider those who do have access, such as caretakers and site maintenance personnel, as radiation workers who could receive much higher occupational exposures. Therefore, § 61.52(a)(6) has been changed to reflect the Part 20 unrestricted limits.

A number of other individual comments and suggestions were considered and were addressed in the detailed analysis of comments. Some clarifying changes were made to the rule as a result.

Subpart D: § 61.53, Environmental Monitoring. Only nine commenters addressed the provisions for environmental monitoring. One commenter observed that analyses of release pathways should be conducted so that they may be validated by data acquired from subsequent monitoring, a point with which the Commission agrees. Two comments addressed the 12-month preoperational monitoring requirement: one thought it too long, the other too short. While a one-year period of site specific data may not provide the range of fluctuations in data expected over a longer period, the site specific data can be augmented by reconnaissance level data or regional data that can be correlated with the site-specific data. These activities should be started early enough in the site development process that they do not interfere with a timely submittal of an application. Additional data may be obtained as the licensing process continues which can be used to update the application.

It was noted that the environmental monitoring requirements are not detailed or specific and at least one commenter suggested that highly detailed prescriptive requirements be set forth. Because of the wide variety of site-specific conditions, and a desire to avoid overly prescriptive requirements in Part 61, the Commission does not feel that this suggestion is practicable. A Branch Technical Position on Monitoring is being prepared and will provide additional guidance.

It was pointed out that one important purpose of a monitoring system is to provide early warning of migration of radionuclides from the disposal site before they leave the site boundary. The Commission agrees, and has made a clarifying change to that effect.

The Department of Interior recommended that "geochemistry" be added to the site characteristics to be studied. This has been done.

Subpart D: § 61.55, Waste Classification. Over half of the commenters on Part 61 offered comments on one aspect or another of the waste classification provisions. Nearly 20 different issues were identified and addressed in the staff's detailed analysis of comments. In general, there was support for the concept of identifying wastes that were generally acceptable for near-surface disposal and further dividing this general category into more specific classes. Most of the comments were related to understanding how these categories were established and the basis for them; support for further identifying a class of waste that would not be of any regulatory concern because of its low radioactivity, i.e., a "de minimis" level; what should the upper limits be particularly for certain radioisotopes such as the transuranic elements; what provisions will be made for disposal of waste that exceed the limits for near-surface disposal; and how does a waste generator show compliance with the waste classification requirements. There were a large number of comments requesting clarification and restructuring of the

requirements to make them more understandable, as well as a number of miscellaneous comments.

With respect to those comments that the numbers used to define waste classification were not adequately explained or supported in Part 61, it should be noted that most such comments were submitted before the supporting Draft Environmental Impact Statement (DEIS) for Part 61 became generally available. Since a considerable part of the DEIS is devoted to the derivation of the waste classification numbers, the Commission does not feel that the basis needs to be repeated in detail in the rule. The Commission is preparing an analysis of the comments received on the DEIS and these comments will be factored into the final EIS to make the basis for waste classification values more understandable. Other commenters on the numerical values suggested the use of values reported in an earlier NRC contractor document, NUREG/CR–1005. The present waste classification scheme proposed in Part 61 drew on this and other earlier work; however, the earlier approaches to waste classification did not consider the effects of stability or waste form.

Table 1 Proposed values for several radionuclides that were the same value regardless of the class of waste. This has lead to some confusion and misunderstanding. In the disposal of wastes, precautions are taken to provide protection against intrusion for the first several hundred years. These precautions include institutional controls, waste form requirements, and intruder barriers. There are certain radionuclides common to waste that are of such a long half-life that they will be present several hundred years from now in essentially the same concentration as when they were originally disposed. Therefore, the rule limits the initial concentrations of these radionuclides to values that will be acceptable after several hundred years when the intrusion protection measures are not considered to be effective.

Over one fourth of all commenters endorsed the concept of setting levels for wastes below which there is no regulatory concern, the so-called "de minimis" level. Some of the commenters supporting the de minimis concept made direct reference to the Commission's position that exempting particular waste streams from compliance with the Part 61 regulations was preferable to setting generic levels for all isotopes. Several disagreed with this position, although at least one of these commenters remarked that as there is not yet a consensus on a generic de minimis level, any level chosen would be premature. A number of other commenters suggested that a de minimis classification be added to the Part 61 regulations, perhaps as an additional column in Table 1.

Several commenters suggested that NRC permit case-by-case review of requests for specific application of the de minimis concept during the period criteria are being developed. Others suggested specific values for specific waste streams or radioisotopes.

The fundamental concern of practicially all commenters was not as much whether a generic or a case-by-case approach be taken, but rather that action to develop de minimis standard should be taken as soon as possible.

The Commission agrees with the importance of setting timely standards for disposal of certain wastes by less restrictive means. The Commission agrees with the commenters that establishment of such de minimis levels would reduce costs of disposal for many licensees and would also conserve space in disposal facilities which are otherwise designed for wastes having much higher activities. The Commission also believes that establishment of de minimis levels is important in enhancing overall stability of a disposal facility, and therefore in reducing potential long-term site maintenance and corresponding costs, since de minimis levels would reduce the volume of Class A waste. This would also tend to reduce ground water migration impacts, since subsidence and water infiltration would be reduced.

Regarding the issue of setting de minimis levels on a generic or on a case-by-case basis, the Commission still believes that the current policy of examining waste streams on a case-by-case basis will result in the quickest and best results. It is recognized that setting generic limits may be a desirable goal, and the Commission Plans to work this goal over the next few years. Meanwhile, the Commission believes that the process of examining a few specific waste streams will facilitate the development of generic requirements and is accelerating its efforts on setting standards for disposal of wastes by less restrictive means. In this regard, the Commission staff is willing to accept petitions for rulemaking from licensees, licensee organizations, or others for declaring certain waste streams to be of no regulatory concern. Such petitions should provide at least the following information:

- A description of the process by which the waste is generated;
- A description of the waste generated, including chemical characteristics;
- The radionuclide content of the waste, including principal *as well as* trace contaminants;
- A description of the potential change in the radionuclide content as a function of process variations;
- A description of the process control and quality control programs by which the licensee would ensure compliance.

Waste streams common to a number of licensees and in which the radionuclide content is well known and relatively nonvarient are generally preferred. Individual licensees may also continue to request amendments for alternative disposal methods for the licensee's own waste pursuant to § 20.302.

Of all the values proposed in Table 1, the limits for contamination by alpha emitting transuranic elements received the most attention and comments. There were a number of issues raised related to the allowable concentration, ranging from its validity to the impacts of meeting the limit. By far the most comments were related to the magnitude of the limit. Of the 23 commenters on the transuranic issue, four thought the 10 nCi/gm limit should be retained or lowered, while the remaining 19 suggested that the limit be raised. Those who suggested that the limit be raised presented a number of supporting arguments. Many, if not most, of the commenters suggested that the limit could be safely raised to 100 nCi/gm. One argument given is the advantage of enforceability of the higher limit. With current measurement techniques, it is argued that it is very difficult if not impossible to certify that waste contains less than 10 nCi/gm, but much less difficult to certify that it is less than 100 nCi/gm. Others pointed out that a 100 nCi/gm limit would encourage volume reduction through incineration and other means while conversely, the 10 nCi/gm limit would discourage volume reduction, contrary to the Commission's policy on volume reduction. The commenters cited a number of reports, documents, and ongoing activities as providing justification for their contentions, including a proposed revision to the Department of Energy Manual Chapter 0511. Some commenters felt that the Commission's calculations were excessively conservative. The most common comment in this regard was that the analysis did not consider dilution by other wastes, and if that dilution were considered, the allowable concentration could be increased by an order of magnitude or more.

The commenters that supported the 10 nCi/gm limit or did not want it raised generally made statements of endorsement for the value because of prior use or because of the view that wastes exceeding this limit should not be buried at commercial low-level waste disposal sites. Concern in this regard was also expressed over the provision in § 61.58 that the Commission could, on a case-by-case basis, grant exemptions to the waste classification requirement, thereby permitting disposal of higher concentrations of transuranic radionuclides.

In response to these comments, the Commission has reevaluated the analyses for disposal of waste containing transuranic nuclides, in an attempt to temper unnecessarily conservative assumptions, such as not considering the dilution by other wastes that decay to essentially inert levels with time, so that more realistic estimates of consequences will result. As a result, disposal limits for Class C, waste have been raised to 100 nCi/gm for long lived alpha emitting transuranic nuclides. For Class A wastes, the limit remains at 10 nCi/gm. The details and results of these analyses are presented in the Final Environmental Statement supporting Part 61.

Several commenters wanted to know what to do with waste containing Radium-226, a radioisotope which is not currently listed. It appears that there are two types of radium wastes to be considered: (1) small concentrated sources of radium such as radiation sources or luminescent dials, and (2) wastes which contain small amounts of radium incidental to other radioisotopes, such as radium contained in wastes from uranium separation processes. The former is not subject to regulation by the Commission, since radium is a naturally-occurring isotope and is not included in the provisions of the Atomic Energy Act of 1954, as amended. The Environmental Protection Agency has a program for collection of radium sources. This program may be phased out in the next few years. Such sources are expected to be transferred to the Department of Energy for storage and disposal. As for radium incidental to other types of waste, the Commission has made provisions for disposal of small quantities of uranium tailings as Class A waste. For purposes of this provision, a small quantity is defined as 10,000 kilograms containing not more than 5 millicuries of radium-226. This concentration is typical of uranium mill tailings (0.5 nanocuries per gram). The quantity of radium-226 is that contained in 150 pounds of natural uranium at equilibrium with its daughter products. 10 CFR Part 40 permits any person to possess and use under general license 150 pounds of source material per year. Permitting the disposal of such a quantity in a near-future disposal facility is judged to be acceptable. For larger amounts, specific approval would be required.

Several commenters expressed concern with a footnote in Table 1 and § 61.55(d) which indicate that greater concentrations than Class C limits may be determined to be acceptable for near-surface disposal under certain conditions. Commenters were either opposed to permitting any higher concentrations or asked for clarification of what the requirements would be for higher concentrations.

The Commission established the Class C limits using the performance objectives as criteria to ensure safe disposal of waste considering the degree of protection provided by "normal" near-surface disposal. To ensure that the performance objectives are met, disposal of higher concentrations of isotopes than those listed in Table 1 would have to be by disposal technologies having greater confinement capacity or protection than "normal" near-surface disposal. Such improved disposal technologies could, depending on the particular radioisotopes, involve better waste forms or packaging, or disposal by methods having additional barriers against intrusion (e.g., burial at depths greater than 5 meters). The Commission believes that some flexibility should be permitted, provided the performance objectives are met, and therefore will evaluate exceptions on a case-by-case basis. In the meantime, the Commission is beginning studies to establish criteria for the disposal of wastes that are not normally suited for near-surface disposal. These would be the subject of future rulemaking.

Over one dozen commenters, nearly all of which were nuclear utilities or industry groups, expressed concern with how one determines compliance with the waste classification requirements. Most were concerned that the regulations would require them to routinely measure for every isotope in Table 1 within each package of waste. Many examples were given of the difficulty that this would present, citing heterogeneous waste mixtures, difficult to measure radioisotopes, increased costs, radiation exposures to personnel, etc. A number of suggestions were offered related to means of classifying the waste by its source, measuring key isotopes to infer quantities of more difficult-to-measure isotopes, and establishing different limits for every disposal site.

The Commission expects licensees to carry out individual programs to assure proper classification of waste. However, the Commission does not feel that detailed measurements routinely made on all waste packages are necessary or desirable. The Commission staff is developing guidance to licensees on a number of alternative methods by which compliance can be shown. At present, the Commission staff has identified four basic programs which may be used either individually or in combination by licensees. They are: materials accountability; classification by source; gross radioactivity measurements; and direct measurement of individual radionuclides including scaling some radionuclides based upon measurement of others. These methods are discussed in the Branch Technical Position on Waste Classification being prepared.

Several commenters also raised the issue of averaging concentrations to comply with the concentration limits. One expressed concern about the potential for concentrated or "hot spots" of transuranic nuclides permitted under the proposed provision to allow concentrations to be averaged over the volume of the package. Since the trace transurenic nuclides in most shipments will be homogeneously distributed and incidental to the total activity, averaging over the packages is physically representative of the majority of wastes. Reprocessing or other future changes in waste streams which might change the transuranic character of the waste can be addressed in subsequent rule changes. Other commenters were concerned about potential ground water restricted inventory limits on radionuclides which are present in wastes in very low concentrations. Assay of individual packages for these nuclides is difficult as discussed in the preceding paragraph. Averaging the concentration of radionuclides such as Tc-99 or I-129 over the waste shipment or control on a total site inventory basis was suggested to minimize conservative over-reporting. Such over-reporting could exhaust site inventory limits and lead to inefficient use of the site. The Commission agrees. This issue will also be addressed in the Branch Technical Position on Waste Classification which will be available in early 1983. The concentration averaging language in the final rule was changed to provide additional flexibility for the specific guidance being developed in the Branch Technical Position.

In a related issue, a few commenters remarked on the difficulty of inspection

and enforcement to ensure compliance with the Part 61 requirements, citing past history of waste shippers not complying with the present DOT and NRC shipping requirements.

The Commission has recognized the importance of increasing inspection and enforcement activities in the processing, packaging, and transportation of waste. A number of programs have been initiated to improve compliance. At the present time, enforcement comes largely on the basis of provisions in the existing regulations (e.g., 10 CFR Parts 30, 40, and 70) that no licensee may transfer licensed material to another person unless that person is properly licensed to receive it. Requirements on waste form, concentrations, etc., are a part of the disposal site licensee's license. The Commission believes that issuing regulations to which all waste generators and disposal site operators would be subject will give the Commission a stronger basis for inspection and enforcement. Adoption of uniform requirements by Agreement States will greatly bolster the effectiveness of a national system of inspection and enforcement.

There were several commenters who argued that the waste classification scheme tends to discourage volume reduction, since this increases concentrations of radioisotopes and may result in a change in classification, or at the extreme, make the waste unacceptable for near-surface disposal. As long as the resulting concentrations of radioisotopes are within the limits set by Part 61, the Commission does not feel that waste classification necessarily discourages volume reduction. While a higher classification of waste might result in more stringent requirements on waste form and disposal methods, there are economic considerations that need to be considered by the waste generator. The cost of processing, shipping, and disposal of a small volume of higher classification waste needs to be compared with the transportation and disposal of a larger volume of a lower classification waste. There is no reason to believe that the balance will always be against volume reduction. For wastes with concentrations that would place them not generally acceptable for near-surface disposal if they were volume reduced, the provisions for specific Commission approval of the disposal of such wastes provides a potential alternative for licensees considering volume reduction.

Several commenters were concerned with materials which may be present in low-level radioactive waste which may be chemically toxic or hazardous. Some suggested that the Commission's waste classification system incorporate a "total hazard" approach that would consider both the radiological and chemical hazard of wastes. At least one comment did not favor the total hazard approach because of the very complex classification system that the commenter perceived would result.

The Commission has stated publicly on several occasions that if it were technically feasible to classify waste by total hazard, then it would make eminently good sense to do so. We do not now know of any scheme for such classification; however, the Department of Energy intends to support research into the development of a classification system for hazardous waste that might be compatible with Part 61. In the meantime, the Commission will study the chemical toxicity of low-level waste, with special emphasis on identifying any licensees who generate hazardous wastes subject to requirements of the Environmental Protection Agency. We will look then at what could be done, perhaps through processing, to minimize the hazard.

Furthermore, the Commission believes that the technical provisions of Part 61 generally meet or exceed those expected in the Environmental Protection Agency's rules for the disposal of hazardous wastes. Although it is not the Commission's intent to allow disposal of hazardous wastes in a radioactive waste disposal facility, as is noted in the regulation, the Commission recognizes that such wastes may be present in low-level radioactive wastes. It is the Commission's view that disposal of these combined wastes in accordance with the requirements of Part 61 will adequately protect the public health and safety. Such hazardous wastes are expected to be such a small percentage of the total volume that dilution by other wastes would greatly minimize any risks. The Commission intends to work closely with the Environmental Protection Agency to assure continued compatibility. Further, EPA in its response to a resolution of the Conference of Radiation Control Program Directors indicated their willingness to work with other Federal agencies to address this problem.

Several commenters raised questions on the basis or criteria for setting site inventory limits for certain radionuclides, as was indicated in Table 1 of the proposed rule. Some correctly noted that such inventory limits would be site specific. The Commission established concentration limits for radionuclides based on a number of considerations, including protection of a potential intruder, operational safety, and long-term site stability. In addition to concentration limits, the Commission desires the ability to limit maximum site inventories for some isotopes that are of concern from a ground water point of view. Isotopes which are both mobile and long-lived are iodine-129, technetium-99, and carbon-14. Tritium is of concern due to its extreme mobility and its presence in waste in large quantities. Establishment of inventory limits through site-specific license conditions for such radionuclides will help ensure that the performance objectives for ground water migration are not exceeded. The Commission does not plan, as was suggested by a few commenters, to esteblish site inventory limits for every isotope to protect against potential intrusion. Inadvertent intruder exposures are mainly controlled by the concentration of a particular isotope, and to a lesser degree by the site inventory.

Several commenters raised specific points about the cost and regulatory burden of the waste classification requirements. Much of the concern was related to the issue of costs for determining compliance with the concentration limits, as discussed earlier. The basis of the concentrations, in particular the 10 nanocurie per gram limit for transuranic nuclides was of concern and is discussed elsewhere. One commenter expressed the view that the classification requirements would raise the cost of disposal because of perceived increased cost for disposal of Class A waste and the cost of quality control activities.

While some costs will be associated with these concerns, when they are weighed against the longer term costs and institutional burdens that may result if the requirements are not adopted, the Commission judges the short-term costs to be warranted.

The State of Nevada, who regulates the Beatty site, expressed the view that the rule will increase the burden and expenses of the regulatory agencies. Two reasons cited related to monitoring the adequacy of site maintenance funds and inspection of waste generator packaging and classification activities.

Monitoring the adequacy of funding is already a part of the program for regulating disposal sites and is only peripherally related to waste classification in that stability is not assumed for Class A wastes. This is not different from the existing situation at disposal facilities where a large percentage of waste is not in a stable form. Thus, this does not appear to be a significant increase in regulatory

burden. Inspection of waste generators for compliance with waste classification is more the responsibility of the Commission or the Agreement State regulating the generator. Existing regulatory responsibilities include inspection of the packaging and shipment of radioactive waste. The incremental burden of reviewing a licensee's program for classifying these wastes should be small.

In addition to the above issues, a large number of commenters offered individual comments on a variety of points of clarification, format, definition, and completeness of the provisions for waste classification. While not summarized here, they are addressed in the detailed analysis of comments by the Commission staff, and to the extent practicable, these comments were reflected in the revision of § 61.55.

As a result of these comments, § 61.55 has been revised to present the classification values in two tables rather than one. Those radio-nuclides with long half-lives, along with some shorter-lived precursors of long-lived nuclides, are now listed separately in a new Table 1. The presence of these long-lived radionuclides will dominate the classification of the waste. If waste contains less than one tenth the concentration of such a nuclide listed in Table 1, it is Class A waste; greater than that, it is judged to be Class C waste provided the concentration does not exceed the value shown in Table 1. Shorter-lived radionuclides are listed with a range of concentrations in Table 2. Depending on the concentration, wastes containing only these shorter-lived nuclides will be judged to be Class A, B, or C. If waste contains nuclides listed in both tables, the mixture must be considered in determining the waste class. If Table 1 nuclides are present in concentrations less than one tenth the Table 1 limits, the class is determined by the Table 2 nuclide concentration. If Table 1 nuclides exceed one tenth of the Table 1 limits the waste is Class C regardless of the Table 2 concentrations.

The phrase "theoretical maximum specific activity" has been eliminated and replaced with a notation of "no limit." A footnote to Table 2 explains that while there is no theoretical limit for concentrations of certain nuclides in Class B and C wastes, practical considerations such as radiation and heat generation will determine the limits.

Several radionuclides have been removed from the originally proposed table. Cesium-135 was removed because it is present in wastes in very small concentrations and classification will be determined by the presence of Cs-137 and because Cs-135 is a pure beta emitter which is very difficult to measure. Similarly, the radionuclides Ni-59 and Nb-94 have been removed except as they may be contained in activated metals. As examined in the draft environmental impact statement of Part 61, these nuclides are present in reactor wastes (other than activated metals) in such small concentrations as to be insignificant. Uranium has been removed as a radionuclide that must be considered for waste classification. The Commission's analysis shows that the types of uranium-bearing wastes being disposed of do not present a sufficient hazard to warrant limitation on the concentration of this naturally occurring material. Both depleted and enriched uranium do not contain daughter products in any quantity because of the relatively short time since the uranium was refined from ore, compared to the half-lives of the uranium isotopes. The daughter products are disposed of primarily as uranium mill tailings. Primarily for these reasons, the uranium limits were dropped.

For a number of radionuclides, the maximum allowable concentrations in Class C waste have been increased by a factor of ten. This came in response to a number of comments received on the proposed rule and the draft environmental impact statement that pointed out where unnecessarily conservative assumptions had been incorporated into the calculations for intruder protection. These comments pointed out that waste disposed beneath five meters of cover would be difficult to contact even at 500 years and that such waste would be diluted by the other wastes whose radioactivity had decayed to extremely low levels. Additionally, the average concentrations tend to be only a fraction of the maximum permissible. At the present time, these are recognized by the Commission as conservative assumptions and the Commission has found that an order of magnitude increase in Class C limits is warranted. This order of magnitude increase has not changed the established framework of factors such as relying on up to 100 years of institutional control and a 500 mrem whole body limit for intruders.

The radionuclide, curium-242, was added to the nuclides in Table 1. While Cm-242 is a relatively short-lived nuclide (163 days) it decays to plutonium-238, a transuranic nuclide with a half life of nearly 90 years. The concentration of 20,000 nanocuries per gram for Cm-242 will result in a concentration of 100 nanocuries per gram of Pu-238.

To the extent practicable, the numerous footnotes originally found in the proposed Table 1 were eliminated and have been incorporated, where appropriate, into the textual part of the section on waste classification.

In response to a number of comments, a statement is made that permits the concentrations of nuclides in waste to be determined by means other than direct measurement. These methods may include such things as material accountability, where records of receipts, shipments, and inventories can confirm that waste concentrations could not exceed permissible concentrations. Other indirect methods might include "inferential" measurements where a ratio is established between nuclides in a mixture and the concentrations of the difficult-to-measure nuclide is inferred based on measurement of some easier-to-measure nuclide. Whatever the indirect method used, there should be reasonable assurance that the values determined could be correlated with actual measurements. For example, in the case of inferential measurements, the ratio on which the value is determined should be based on previous actual measurements. In the other example above, the receipts, shipments, and inventories should be based on measured value.

Subpart D: § 61.56, Waste Characteristics. A large number of comments were received addressing both the minimum and the stability requirements for waste form characteristics in § 61.56. The following summarizes the comments on the minimum requirements.

One commenter objected to the use of absorbent material to immobilize liquids contained in Class A waste, stating that using absorbent materials was an obsolete technique. The State of South Carolina recommended that this requirement apply only to institutionally generated aqueous or biological waste forms. Since various absorbents have been shown to be effective with liquids, such as organic solvents, oils, etc., the Commission sees no reason to restrict the use of absorbent material to aqueous or biological waste. The Commission does not see any reason to restrict the use of absorbents to institutional generators.

Eighteen commenters stated that the requirement (proposed in Table 1, § 61.55) to obtain specific approval to dispose of wastes containing greater than 0.1 percent chelating agents was too restrictive, and stated that utilities might decide against performing

decontamination operations which could reduce occupational exposures. Several commenters requested the basis for the 0.1 percent limit. One commenter recommended that no chelating agents be permitted.

Since chelating agents have been shown to increase the migration of certain radionuclides at certain sites, the Commission desired to evaluate the disposal of large quantities of wastes containing high concentrations of chelating agents on a case-by-case basis. This approach was used when the Commission staff reviewed the disposal of wastes that would be generated in the decontamination operations at the Dresden Unit 1 Station. Because the disposal of wastes containing chelating agents is dependent on the characteristics of the disposal facility and on the properties of the waste form, the Commission has modified the chelating agent disposal requirements to reflect this. The Commission has placed on the disposal site license applicant the responsibility for describing the conditions for disposal of waste containing chelating agents. If approved by the Commission, site specific requirements will be placed on the disposal facility licensee. At this time the waste generator will be required only to identify such wastes in the information contained on the shipping manifest.

At the request of comments, definitions have been added for the terms, "hazardous," "pyrophoric," and "explosive."

Of five comments received on the prohibition against packaging waste in cardboard or fiberboard boxes, four felt the prohibition is unnecessary. One commenter supported the provision. After reviewing the comments, including the reasons presented, the Commission still believes that such a prohibition is needed. The experience cited by the Department of Energy, of successfully using cardboard containers for waste packages at their sites, does not include extensive handling and transportation that commercially generated wastes might encounter. The existing prohibition against cardboard and fiberboard containers at existing disposal facilities came about as a result of unfavorable experience in receiving, handling, and disposing of wastes in such containers. No change has been made in this requirement.

Ten commenters addressed the requirements relating to waste in a gaseous form. Severel noted an inconsistency between the provisions in §§ 61.56(a)(5) that prohibits wastes capable of generating toxic gases, and 61.56(a)(7) that permits up to 100 curies of activity in waste in a gaseous form. Several requested the basis for the 100 curie limit. A recommendation was made that gases should be processed into liquid or solid forms, and another felt that gases should be limited to several microcuries. The Department of Energy recommended that krypton 85 immobilized by zeolite encapsulation or ion implantation into metal be permitted with concentrations up to five million curies per cubic meter.

The intent of § 61.56(a)(5) is to prohibit the disposal of wastes that are chemically reactive under ambient conditions and produce toxic gaseous reaction products. This section is not intended to prohibit the disposal of properly packaged gases such as H-3 or Kr-85 which occasionally require disposal. This section has been reworded to clarify the intent. The 100 curie limit derives from the existing limits at commercial disposal facilities. The Commission has studies underway to determine whether higher limits would be appropriate. Such limits, if justified, would be proposed in a future rulemaking. In lieu of a requirement that gases be converted to a liquid or a solid, the Commission is evaluating the significant generators of tritium wastes and investigating improved package designs for tritium wastes which would be capable of retaining the contents until they had decayed to innocuous levels. The requirements of Part 61 do not contemplate the disposal of millions of curies of Kr-85 as suggested by the Department of Energy. The Commission is not prepared to set disposal requirements for this waste at this time, and since this waste is not liable to be generated by Commission licensees in the near future, the Commission believes there is ample time to assess the still emerging technology for krypton fixation and establish suitable disposal requirements through future technical guidance or rulemaking action.

Some commenters felt that the requirement in § 61.56(a)(1) that waste packages presented for disposal must comply with NRC and DOT transportation regulations implied that outer packaging such as shipping casks must also be disposed. This was not the Commission's intent. Since proper packaging for transportation purposes is specified in regulations elsewhere, the Commission feels that it is not necessary to restate them in Part 61, particularly in view of the confusion created. This requirement has been deleted.

As discussed earlier, the Commission is concerned with the possible hazards presented by non-radiological components of the radioactive waste. This was recognized in the requirement proposed that wastes containing biological, pathogenic, or infectious material must be treated to reduce the potential hazard to the maximum extent practicable. The Commission believes it is prudent to add hazardous properties to this requirement and has done so.

A variety of comments were received on the proposed requirements in § 61.56(b) that pertain to the stability of Class B and C wastes. These are discussed below for the various aspects of the requirement.

Nine commenters commented on the statement that the requirements were intended to provide stability for at least 150 years. Three thought that the 150 years was overly restrictive and two recommended 100 years to correspond to the institutional control period. Others observed that some nuclides would not decay to low levels during the 150 years, that Class A waste should also be stable because of the presence of Cs-137 and Sr-90, that steel drums could not be expected to last this long, and that high integrity containers have not been tested for 150 years.

The Commission has reviewed the 150 year stability requirement with respect to the scenarios used to calculate the waste classification values. The property of stability contributes to meeting successfully several of the performance objectives set forth in Part 61. A waste that is stable for a long period helps assure the long term stability of the site, eliminating the need for active maintenance after the site is closed. This stability helps to assure against water infiltration due to failure of the disposal unit covers and, with the improved leaching properties implicit in a stable waste form, minimizes the potential for radionuclide migration in groundwater. Stability also plays an important role in protecting an inadvertent intruder, since the stable waste form is recognizable for a long period of time and minimizes any effects from dispersion of the waste upon intrusion.

The 150 year period was initially chosen to approximate the active life of a near-surface disposal facility, along with the periods of post-closure observation and institutional controls. At the end of this period, the intrusion scenario is based on the intruder readily recognizing any uncovered waste as something out of the ordinary with the result that no further attempts at construction or agriculture would be attempted. When other aspects of the performance objectives are considered,

however, a longer design life is called for. The waste should continue to maintain its gross physical properties and maintain a measure of its identity for several hundred years more to provide site stability and to keep the Class B and C waste recognizable and unsuited to the construction and agriculture scenarios postulated. Consistent with its desire to avoid prescriptive requirements where possible, the 150 year specification has been removed. It is the Commission's belief, however, that to the extent that it is practicable, waste forms or containers should be designed to maintain gross physical properties and identity over 300 years, approximately the time required for Class B waste to decay to innocuous levels. This is reflected in Commission staff technical positions.

Fourteen commenters indicated that the proposed requirement that a stable waste form maintain its physical dimensions within five percent was overly restrictive and impossible to achieve due to the impracticality of filling containers to 95 percent capacity. Commenters also noted that asphalt and polymeric solidification agents would be incapable of meeting this requirement because of their viscoelastic creep properties. Commenters also observed that the limit could entail added expenses.

Upon review of the proposed requirement, the Commission has concluded that there is not sufficient basis at this time to support a numerical limit for deformation of stable waste. The five percent value has been removed from this requirement. Reliance will be placed on the requirements that void spaces within packages must be minimized, that wastes must be emplaced in a manner that permits void spaces between containers to be filled, and that these spaces must be filled.

With respect to void spaces in waste containers being reduced to the extent practicable, six comments were received. Several requested specific criteria on how this would be met and if filler materials were needed. Two felt that economics would drive waste generators to package the maximum volume of waste into a container and that this requirement in the rule is unnecessary.

Due to the highly variable nature of wastes, the Commission believes that it is not possible or desirable to include specific criteria for minimizing voids. To the extent that void spaces can contribute to eventual instability of the waste, they should be eliminated or reduced as much as possible. This might be done in some cases by filling void spaces with other wastes or inert materials.

Eleven commenters objected to the specific requirement that the stability of waste be maintained under a compressive load of 50 pounds per square inch (psi). Most felt that the specific requirement should be deleted and replaced by a more general requirement to reflect actual disposal site conditions and operations.

In response to these comments, the 50 psi specification has been removed from the rule. The specification was based on conservatively assuming maximum burial depths up to 45 feet and waste or overburden densitity of 150 $lb/ft.^3$. Testing performed on acceptable solidified waste specimens indicate that 50 psi compressive strength should be easily obtained. The Commission believes that while this is achievable, some latitute should be allowed for the design of waste forms and containers to reflect site conditions where burial depths may be less.

Since § 61.56(b) permits the stability of waste to be achieved by placing the waste in a suitable container for disposal, a number of comments addressed the properties such a container should exhibit and the uses to which it should be put. It was suggested that the Commission reexamine design criteria for a high integrity container for highly dispersible forms, and one suggested that such container should be used for both high and low concentration wastes. A major supplier of waste solidification technology questioned whether the use of a container reflected the best available technology and the concepts of ALARA.

Three commenters, two of whom are suppliers of waste solidification technology and services, felt that ion exchange resins should all be solidified and that disposal of ion exchange media by dewatering is not within the concepts of ALARA and use of the best available technology.

The Commission staff is preparing a technical position on waste form criteria, including design criteria for a high integrity container. Draft copies have been made available to interested parties for their review and comment. In short, the technical position states that the container must provide as much assurance of stability for as long as required for a stable waste form or product. It should be designed, to the extent that it is practicable, to contain the waste and maintain gross physical properties and identity over 300 years, under the conditions of disposal. The Commission believes that the use of containers to achieve stability is consistent with the concept of ALARA and the use of the best available technology. Occupational exposures in using high integrity containers are expected to be similar to or less than waste solidification, either with mobile or installed systems.

Several commenters addressed the proposed limitation of free standing liquid which would require that such liquids be reduced to as low a level as is reasonably achievable, but in no case to exceed 1 percent. Further, the proposed rule stated that the liquid should be noncorrosive. There were no requests to increase the value. However, one waste solidification service supplier recommended a limit of zero, while the State of South Carolina recommended implementing the limits in the license for the Barnwell disposal facility, i.e., 0.5 percent for solidified wastes, 1 percent for waste in high integrity containers. Several commenters asked for a definition of the term "noncorrosive."

The Commission has reexamined the proposed limit on free standing liquid and judged that solidified wastes and wastes in high integrity containers should be addressed separately. The Commission has concluded that existing waste solidification technology can produce a waste form that is essentially free of free standing liquid. In order to compensate for potential condensation of water vapor sealed in containers, the Commission believes that a limit of 0.5 percent by volume is appropriate for solidified wastes. For dewatered products, such as ion exchange resins, that are in a container designed to ensure stability, it is very difficult to ensure that such products would meet a 0.5 percent requirement following transport to a burial site. Therefore, for dewatered products, 1 percent should be allowed to account for settling during the transport period. The non-corrosive properties of the liquids will be defined and discussed in a staff technical position, rather than in the regulation. To provide a degree of consistency between Class A wastes and the Class B and C wastes, the limitations on liquids in Class A wastes have been modified. Liquid waste must be packaged with sufficient absorbent material to absorb twice the volume of the liquid. Solid wastes with incidental liquids must meet the 1 percent free standing liquid requirement.

Two commenters pointed out what they perceived as inconsistencies between Part 61 and other Commission rules or guides. One of the guides referenced is the Effluent Treatment Systems Branch Technical Position 11–3. This document was revised in July 1981 and is consistent with Part 61 requirements. The Commission fails to

see inconsistency between Part 61 and its supporting EIS, with Appendix I of Part 50, or guidelines for storage of waste, as claimed by the commenters.

Subpart D: § 61.57, Labeling. Several commenters offered suggestions or raised questions on the requirement that waste packages be labeled to show the classification of the contents. The commenters suggested color coding, different wording, consistency with DOT labeling, minimum standards, and asked for clarification of responsibilities.

The requirement for labeling is to provide the disposal facility operator with information as to whether the contents are Class A, B, or C wastes so that he will be able to dispose of them in the proper manner. The Commission does not feel that a Federal standard for such labeling is warranted, only that it be clear and legible. Individual facility operators may have operating procedures that could be enhanced by label location, size, color, etc. Since the label is to benefit the operator, it is more appropriate for him to set specifications through contractual arrangement. A suggestion to simplify the nomenclature on the labels was adopted and a minor change was made in § 61.57.

Waste classification labeling is in addition to labels required by DOT for transportation purposes. There is a similarity in nomenclature between the Class A and B wastes and the Type A and B packages used by DOT. DOT requires that packages be labeled as to whether they are Type A or B, therefore, there could be some confusion if the packages are labeled to indicate the waste classification. However, DOT has a variety of numerical and alphabetical designations and it is difficult to avoid some similarity in designation.

Subpart D: § 61.59, Institutional Requirements. There were few comments on the requirement for State or Federal ownership of the disposal site. Those commenting expressed general support. One commenter suggested that the State should have an option to turn ownership and responsibility for long-term custody over to the Federal government. Such an option is not available under current law. In related comments, two commenters expressed concern over the State's responsibility and liability after accepting the disposal site for custodial care. Since the State does become responsible for the site, the State must be involved and aware of the operations and conditions at the site during its operation. This could be done through some independent oversight as landlord, or through participation with NRC in the review of the initial application as provided in Subpart F of Part 61.

About twenty commenters addressed the appropriateness of the 100 year limit on institutional controls and its effect on wastes acceptable for disposal under the conditions prescribed by Part 61. All commenters expressed support in one way or another for defining a time frame for institutional control related either to the hazard duration of the waste or assurance of continued government stability or concern. It was generally agreed that waste that was potentially hazardous after the end of the assured institutional controls should be disposed of by methods providing greater controls and assurances against potential exposure. These comments are judged to support the provisions of Part 61 that combine institutional controls with waste form, site characteristics, and site design and operations to provide assurances that potential exposures will be with acceptable limits. Class A waste that is potentially accessible and unrecognizable is no longer hazardous after 100 years. Special provisions for waste being in a stable form and in some cases buried deep assure against potentially unacceptable exposures or releases for up to 500 years.

There were a number of suggestions that the period of institutional control should be raised from 100 to 300 years. There appear to be two basic reasons for these suggestions. One reason is that institutions such as a state or the Federal government can reasonably be expected to survive for much longer than 100 years. A second reason is that the 100 year restriction on institutional care affects the waste concentrations acceptable for disposal as Class A waste with resultant higher costs to the waste generator. With respect to the first reason, the Commission feels that it is not a question of how long the government can survive, but how long should they be expected to provide custodial care. Based on work done by EPA, public comments on a preliminary draft of Part 61 and an advanced notice of proposed rulemaking, and four regional workshops, a clear consensus was developed which supported the 100 year limit. The Commission has not seen any compelling reasons to change its view on the 100 year limit.

Some commenters expressed the view that the government landowner should have flexibility in controlling site access during the institutional control period and that productive uses of the land which would not affect site integrity should be permitted. The Commission agrees and words to that effect have been added to the Concepts section, 61.7.

Subpart E: Financial Assurances. Approximately two dozen commenters responded to the proposed financial assurance requirements for closure and post-closure care. In general, the commenters expressed support for the rule's establishment of financial assurances for closure and for long term care of a LLW disposal site. Commenters mentioned that the existing history of LLW disposal sites revealed a strong need to require licensees to demonstrate evidence of financial responsibility so that the public health and safety were protected and also so that potential liabilities do not rest with state taxpayers.

Several commenters felt that the financial requirements should provide more detail. The Commission agrees and has prepared a draft Branch Technical Position on Funding Arrangements for Closure and for Long-Term Care of a LLW Disposal Site that provides definitive guidance for evaluating all financial assurances, including surety bonds.

One of the major points raised by a variety of commenters was that the proposed regulation failed to address financial responsibility for unanticipated contingencies at a LLW disposal site. One group expressed concern that the regulations set the stage for a "tax-payer funded bail-out" of poorly-run disposal sites. They felt the industry should bear these costs, and that the regulations should be written to make this explicit. Another commenter noted that the experience of the State of Kentucky with Maxey Flats emphasized the importance of making contingency funds available in the event that serious problems occur. They felt this issue should be addressed in the rulemaking. One State further noted that the rule failed to mention who would be financially responsible if problems occur at the site that cost more than were budgeted on an assumption of normal operation. These questions cover such a variety of different scenarios (i.e., Acts of God, licensee negligence, etc.) that it is not possible to specifically respond to all of the potential contingencies. However, a general response to the overall issue of responsibility for contingencies at a low-level waste disposal site is possible. These comments cover two different time periods—the post-closure period, when the original licensee is still responsible at the site, and the institutional control period, when the license has been transferred to the landowner of the site for a period of up to one hundred years.

In the case of the post-closure care period, the licensee would be responsible for all activities at the site found necessary by the Commission to protect the public health and safety. Financial responsibility for activities during the institutional control period are a matter to be worked out between the site owner (i.e., the State or Federal Government) and the licensee in their lease or other legally binding arrangement. It is possible that if the site owner were a state, they would work out an arrangement whereby the site operator would collect a surcharge from waste generators for the institutional control period. The rights and responsibilities of the State and the licensee would be determined at such a time.

With regard to contingencies, one commenter also asked who would assume responsibility for a site and its accompanying waste when it was closed prematurely by the NRC, due to rule violation. Responsibility for a site closed prematurely by the NRC would depend on the situation. Additionally, closure would be a last resort of the Commission, since the agency has other authorities, such as civil penalties, to require licensee compliance. In the event it would become necessary to close the site for health and safety reasons, the rule provides that the licensee continues to be responsible until the license is terminated. In the event that the licensee's financial condition deteriorated so that he was unable to maintain the site to protect the public health and safety, then the Commission would probably require the site owner (either the State or Federal government) to assume responsibility at the site.

Regardless of who assumed responsibility for a prematurely closed site, the rules require that a licensee have available at all times during the site life, sufficient financial guarantees to ensure that sufficient funds are available for site closure and decommissioning. These funds would be available for properly maintaining the site if the original licensee were unable to do so.

Several commenters considered that the rule should resolve the issue of financial responsibility for contingencies by requiring liability insurance or specific language that licensees would be required to indemnify property owners in case of off-site migration. Although not proposed in the original rule, the staff evaluation of these public comments indicates there is a need for licensees to provide financial responsibility for liability coverage for off-site bodily injury and property damage. The Commission thinks the public health and safety and the environment would be protected from unanticipated contingencies by such coverage, as well as assisting the States in establishing disposal sites. Four existing LLW disposal facilities currently carry this type of liability coverage, and several other State and Federal agencies, including EPA have imposed similar requirements for hazardous and radio-active waste facilities in order to protect the public health and safety and the environment. However, at the present time, the Commission's only statutory framework for establishing such a requirement is Section 170 of the Atomic Energy Act, also known as the "Price-Anderson" Act. This type of coverage is designed to cover "catastrophic events" primarily for nuclear reactor licensees, and the Commission feels this coverage would be in excess of the risk at a low-level waste facility. Therefore, the Commission has not established a third party liability requirement in this regulation. The Commission will strongly encourage licensees to continue to carry third party liability insurance coverage through the conventional insurance market.

A variety of comments were received concerning the short term financial assurances required for closure and decomissioning. Several commenters supported the rule's use of a variety of different options for closure, noting that flexibility was crucial if the proposed rule was to function in a reasonable manner.

Other commenters expressed support for the rule's provision requiring that the amount of surety liability change with changes in cost estimates. One commenter also was concerned that the financial surety arrangements increase in value over time to compensate for the effects of inflation. The rule allows the Commission to periodically assess the amount of funds collected for both closure and post-closure care of the site and if necessary, the Commission could require the financial assurances to be increased to account for inflation, unforeseen problems, and unanticipated costs.

Commenters expressed support for the variety of alternatives allowed to demonstrate short term financial responsibility. However, several commenters mentioned that no commercial market exists to provide surety bonds of the type mentioned in the rule. In developing the rule, the Commission is aware that surety bonds of the type proposed in the rule may be unavailable at this time. However, the Commission included this alternative in the rule in the event that this type of coverage becomes available in the insurance market at a later time.

Commenters were also divided about whether the Commission should allow self-insurance as a financial assurance for closure. Several commenters felt that self-insurance would not satisfy the surety requirements, and they recommended that licensees should be required to place specific funds in escrow to cover costs of decontamination, closure and stabilization. Another commenter suggested that self-insurance be based on an annual submittal of financial reports, i.e., a financial test.

The Commission rejected the use of stand alone "self-insurance" based on the Commission's lack of confidence in this method to provide adequate assurances. Further, state officials have informally expressed the need to have tangible funds available from the licensee for site closure, so the State as landowner would not be left financially responsible. While not specifically allowing its use on a generic basis in the rule, the Commission will evaluate the use of financial tests proposed by licensees on a case-by-case basis.

Commenters also expressed support for the need to have a long-term care fund established at the time a license is issued. Some commenters wanted the rule to explicitly require the licensee to set aside funds for long-term care. However, the Commission currently lacks the authority to require a licensee to establish a fund to provide for long-term care of the site after the license is terminated. Instead, the Commission can only require a licensee to provide evidence of entering into a lease or other binding arrangement with the site owner indicating that the two parties have established financial responsibility for long-term care between themselves. With regard to the lack of authority, one person suggested that the Commission ask Congress for authority to require financial assurances for licensees for the active institutional control period. The NRC has raised this issue with Congress both in testimony and in a letter commenting on waste legislation.

Subpart F: Participation by State Governments and Indian Tribes. Many of the comments on Subpart F were concerned with interpretations and clarifications. These have been answered in the detailed analysis of comments. Two noteworthy changes were made. In § 61.71, a change was made to ensure that the Director shall make Commission staff available for

discussion with the State or tribal governing body. At the request of the Department of the Interior, a statement was added to § 2.101 to indicate that the Commission will inform the U.S. Bureau of Indian Affairs when tribes have been notified of the filing of an application.

The Commission has been examining ways by which the licensing process can be shortened in time. One way is to conduct activities in parallel where possible, rather than sequentially. One such area is in the submittal and evaluation of proposals by States and Indian tribes for participation in the NRC license review, as provided by Subpart F. As proposed, § 61.72 would provide up to 120 days after an application was docketed for a State or tribe to submit a proposal for participation. The time from initial submittal of the application until it has been docketed is estimated to be 60 days or more. Thus, there is a potential delay of 180 days between the time NRC would receive a proposal and could begin the serious consideration of the proposal. Until resolution were reached on the role a State or tribes would play in the review, the NRC's review of the application could be significantly hampered.

The Low Level Radioactive Waste Policy Act of 1980 clearly states that it is a State's responsibility to provide for the disposal of low level waste. The Act also provides for the formation of interstate compacts for this purpose, subject to Congressional approval. Thus, any application for a disposal facility license will have had State or compact participation and backing for a significant period of time before submittal. During this time, the Commission believes that the State will have had ample opportunity to determine what role it wants to play in the review of the application. This also holds true for other States that are parties to an interstate compact. Therefore, § 61.72 is being changed to require that a proposal from the State in which the facility is proposed, or from any State involved in a compact with the State, must be submitted within 45 days after the application has been tendered. However, the Commission notes that a more prompt submittal by the State would help reduce delays.

Although it is to be hoped that the States will inform Indian tribes of plans for disposal facilities and provide them with sufficient information to permit them to make a proposal at an early time, there is no way of ensuring this. Therefore, Indian tribes and States not covered above will be given 120 days from the tendering of an application to submit their proposal. It is anticipated that the participation of Indian tribes and non-compact States will not impact the schedule of the licensing process as much and this additional time can be accommodated.

The Commission believes that there should be sufficient information in the tendered application on which to base a proposal and that it is not necessary to wait until the acceptance review is completed and the docketing procedure carried out.

By making these changes, review of proposals can be carried out earlier and in parallel with the other reviews. It is expected that this could reduce the licensing time by up to six months.

It shoud be noted that participation by States and Indian tribes pursuant to Subpart F of Part 61 is not through an adjudicatory hearing. If an adjudicatory hearing is requested, then 10 CFR Part 2 applies.

A provision was added to § 61.25 to ensure that State, local, and Indian officials were notified of the opportunity for a hearing for certain types of amendments to the disposal facility license.

Subpart G: Records, Reports, Tests, and Inspections. Several commenters made suggestions on records and reports and the need for resident inspectors. Comments were also offered encouraging state involvement in records review and inspections. Two suggestions, relative to reporting any release of radioactivity and a requirement for maintaining duplicate sets of records were rejected as being impracticable. The Commission, however, would encourage protection of records so that they would not be vulnerable to loss because of fire, flood, or other occurrence. The other suggestions did not require modification of the regulations in order to accomplish what was suggested.

10 CFR Part 2: Rules of Practice. No major issues were raised by the several comments on the proposed amendments to Part 2.

10 CFR Part 20: § 20.311 Transfer for Disposal and Manifests. Because any licensee might make a waste shipment and thus be subject to the proposed manifest system requirements, the Commission mailed copies of the proposed rules to each of the Commission's approximately 9,000 licensees. In addition, some 12,000 copies were furnished to the Agreement States for distribution to their licensees. Out of this large group came a total of 29 letters commenting on the manifest system. These comments were wide ranging, with the majority of questions or suggestions being raised by only one commenter. Only a handful of issues drew more than one comment, with four being the largest number of comments on any issue. As a result of these comments, several changes were made to the proposed requirements to clarify some aspects.

To deal with the situation where a waste collector picks up waste directly from the generator, provisions are made for delivering the manifest to the collector at that time. The waste collector will not be required to attach copies of all waste generator manifests to his, as long as the collector's manifest has the information for each package that is required by § 20.311(b). The person transferring wastes will be required to maintain a signed copy of the manifest or equivalent documentation such as a computer generated printout from the transferee containing the same information and binding acknowledgement as the record required by Parts 30, 40 and 70 governing transfer of licensed material. This was done to provide inspectable records at the waste generator's facility which demonstrate compliance with the manifest requirements.

Changes were made in the requirements dealing with quality assurance. The term quality "assurance" has been changed to quality "control" and management's role has been modified to require evaluation of audits rather than the conduct of such audits.

Of note is that only one commenter, a midwest utility, addressed the question of the burden that the manifest would represent to small entities. When the manifest requirements were proposed, the Commission judged that they would not have significant economic impact on small entities. Pursuant to the Regulatory Flexibility Act, the Commission solicited comments on this matter.

General Comments

Seventeen commenters expressed concern with the use of absolute terms in the rule such as "eliminate" and "prevent." One was concerned about the lack of absoluteness of "reasonable assurance."

As discussed elsewhere, most of the places where such terms were used were in the context of design objectives. Since total achievement of such absolute objectives is unlikely, modifications have been made to the requirements to require minimization or prevention to the extent practicable.

Twelve commenters made suggestions on the kinds of additional regulatory guidance they felt was needed. The Commission agrees with the need for regulatory guidance and has a program

underway to provide such guidance, first in the form of staff technical positions, then as Regulatory Guides. Most of the topics addressed by the commenters are already under development. Consideration is being given to the development of guidance on other topics suggested by the commenters.

One commenter suggested exempting wastes in storage prior to the effective date of the regulation from the packaging and labeling requirements. This comment touches on a subject with broader implications, the phasing in of the Part 61 requirements, consistent with the ability of licensees, Agreement States, and applicants to make necessary changes to assure compliance.

The following sections and subparts will be considered a matter of compatibility for the Agreement States when the rule is adopted: Section 61.2, Definitions; Subpart C, Performance Objectives; Subpart D, Technical Requirements for Land Disposal Facilities; those portions of Subpart B that are necessary to implement the provisions of Subparts C and D; that portion of Subpart E requiring closure funding arrangements; and Section 20.311, Transfer for disposal and manifests. Meetings were held with Agreement State representatives and agreement was reached on a method for uniform implementation of the manifest requirements, waste classification, waste form, and the effective date of Section 20.311 which was set at 365 days after publication in the Federal Register.

Since all other provisions of the proposed rules would pertain only to applicants for new Commission-licensed disposal facilities, there are no reasons to delay the effective date of these requirements. The Commission is working with the Agreement States to develop model regulations to be adopted by the Agreement States in accordance with their agreements to maintain compatible state regulations.

Applicability of the requirements in Part 61 to Commission disposal facility licenses in effect on the effective date of the rule will be determined on a case-by-case basis and implemented through terms and conditions of the license or by orders issued by the Commission.

There were a variety of comments related to commenters questions about the development of new sites, concerns over nuclear facilities becoming *de facto* disposal sites, the need for an environmental impact statement, and an extension of the comment period for Part 61 to correspond with that of the environmental impact statement. These comments are addressed in the detailed analysis of comments and had no effect on the rule. The comment period was, in fact, extended from October 22, 1981 to January 14, 1982 to correspond with that for the EIS.

About one third of all commenters offered editorial suggestions that were aimed at improving clarity, correcting grammatical errors, and noting typographical errors. These were very helpful in preparing the final version of the rule.

Employee Protection

A new 10 CFR 61.9 has been added concerning job protection for employees who provide information to the Commission. The new section is included in this final rulemaking to carry out the Commission's intent that all specific licensees will have similar responsibilities under its employee protection regulations. See the Federal Register notice (47 FR 30452) dated July 14, 1982 for the basis for this action.

New 10 CFR 61.9 emphasizes to employers—that is, licensees, applicants, and their contractors and subcontractors—that termination or other acts of job discrimination against employees who engage in activities furthering the purposes of the Atomic Energy Act and the Energy Reorganization Act is prohibited. In addition, new 10 CFR 61.9 makes the employee aware that if discrimination of this nature is believed to have occurred, a remedy is available through the Wage and Hour Division of the Department of Labor. To ensure that employees of licensees and applicants are aware of these amendments, these organizations are required to post their premises with explanatory material related to the prohibition of discrimination and availability of a remedy in the event of discrimination.

Paperwork Reduction Act

As required by the Paperwork Reduction Act, Pub. L. 96-511, the recordkeeping and reporting requirements in the proposed amendments to 10 CFR 20 incorporated in the 10 CFR 61 rulemaking were submitted to the Office of Management and Budget and were approved. The proposed amendments to 10 CFR Part 20 were not significantly altered as a result of public comments so that approval remains valid. The application, reporting, and recordkeeping requirements contained in 10 CFR 61 apply only to land disposal facility operators and affect fewer than 10 persons and, therefore, are not subject to OMB clearance.

Regulatory Flexibility Act

Based upon the information available and on the public comments received on the proposed rule, and in accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rulemaking will not, if promulgated, have a significant economic impact upon a substantial number of small entities.

The Regulatory Flexibility Act (Pub. L. 96-345) was signed into law in September 1980. The Act's principal objective is to make certain that Federal agencies try, where possible, to fit regulatory requirements to the scale of the affected activity. Significant economic impacts on a substantial number of small entities is a major concern. Part 61 and accompanying rule changes will potentially impact a significant number of persons licensed by the Commission and the Agreement States. The following discussion addresses the factors in the analyses required by the Act and the public comments received. The draft and final EIS's for Part 61 provide additional background information and analysis of the impacts of this rulemaking action.

Section 604 of the Regulatory Flexibility Act requires that the need for the regulatory action be clearly established. The need for standards to govern the disposal of low-level radioactive wastes and new regulations to implement these standards was discussed in detail in the draft EIS. The majority of the public comments supported the rule and thus affirmed the need for the rule and the regulator framework it establishes.

Section 609 of the Regulatory Flexibility Act requires that small entities have an opportunity to participate in the rulemaking when the rule will have a significant economic impact on a substantial number. Since the Commission's initial certification of no significant impact was a qualified one, special efforts to reach small entities were made. For example, the proposed rule was distributed to all Commission licensees (9,000) and made available to Agreement States (12,000 licensees) with a cover letter highlighting the points that might impact them. Comments were solicited from groups such as the Health Physics Society, a national organization of professionals concerned with radiation safety, many of whose members will have to prepare manifests and coordinate compliance with the rule. The Health Physics Society publicized the rule in its newsletters to members. Of some 107 different commenters responding, none specifically addressed

the Regulatory Flexibility Act or the summary analysis. One utility (which is not a small entity) did make a general qualitative reference to burdens on small entities. Twelve commenters representing a variety of sectors (not just small entities) addressed the potential burden of the manifest system.

Section 604 of the Regulatory Flexibility Act further requires a summary of the issues and a statement of any changes made in the proposed rule as a result of the comments. Two commenters were concerned about the burden of specifying chemical form. Four commenters objected to shipper responsibility for tracking shipments. Three commenters including one broker considered the system to be a paperwork burden and two, a general burden. Three supported the system and one indicated no problems in complying. Two objected to forwarding a copy of the manifest and one was concerned about the implications of generator certifications.

The proposed rule included relief language "as completely as practicable" for specifying chemical form. Small entities generate a significant percent of wastes and data on these wastes is needed, so no further relief was provided. Objections to shipper tracking and forwarding manifests stemmed primarily from the need to clarify intent of the rule on waste broker or collector role and responsibility. The transfer of papers and tracking responsibility is more clearly addressed in the final rule. The recommendation for simplifying the paperwork for brokers was adopted. These issues and concerns are addressed in more detail in the staff analysis of comments in the final EIS.

The comments on waste classification were discussed in the preceding summary and resulted in extensive revision of this portion of the rule to simplify and clarify the requirements. The detailed staff analysis in the final EIS provides further discussion of the issues raised.

Federal rules that overlap the proposed rule are primarily those of the Department of Transportation (DOT). The Commission and DOT have an established working relationship implemented through a formal Memorandum of Understanding. The rule itself acknowledges the need to comply with DOT rules, and the Commission currently inspects licensees for compliance with DOT requirements. The manifest required by this rulemaking is consistent with DOT shipping paper requirements, and the same document may be used by licensees to meet requirements of both agencies. Neither NRC nor DOT require a specific form and both allow such dual use. The waste form and packaging requirements are in addition to and compatible with DOT rules. In addition, the manifest terminology and requirements were compared to those in the proposed Uniform Hazardous Waste Manifest, the joint EPA/DOT proposed form published March 4, 1982 (47 FR 9336). A few minor procedural and terminology changes were made to conform to this proposed form. Licensees may use the Uniform Hazardous Waste Manifest, once it is implemented, as both a DOT shipping paper and a NRC manifest for radioactive wastes by using additional spaces to describe wastes and adding information to the back. These changes were made based on consultation with EPA and DOT staff and will help to reduce the burden on all licensees.

The following comment was received from EPA on possible duplicative requirements:

> NRC solicited comments on possible duplicative requirements for effluent releases and broker activities under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). This "Superfund" law exempts from notification "any release of source, special nuclear, or byproduct material . . . in compliance with a legally enforceable license, permit, regulations, or order issued pursuant to the Atomic Energy Act of 1954" (CERCLA Section 101(10)(K)). Radioactive releases from nuclear waste disposal facilities which are not in compliance with an NRC license, permit, regulation, or order fall within the reporting requirements of CERCLA. Furthermore, as part of the notification regulations under CERCLA, EPA is planning to develop a notification scheme for releases of radioactive materials not licensed under the Atomic Energy Act of 1954 or the Uranium Mill Tailings Radiation Control Act of 1978. EPA wishes to minimize duplicative reporting requirements for releases reported to other agencies. EPA intends to work with NRC to minimize duplicative reporting requirements to the extent possible.

The EPA also addressed the potential for duplicative costs to the two agencies for wastes that are a mixture of hazardous chemicals and radioactive materials. Close coordination and a memorandum of understanding were suggested. EPA has regulatory responsibility for the disposal of hazardous wastes under the Resource Conservation and Recovery Act (RCRA). NRC agrees that the two regulatory programs need to be coordinated, and will take action in that regard.

The Regulatory Flexibility Act also requires discussion of alternatives to the proposed action. The recordkeeping and reporting requirements impose such a minor incremental burden that no exemption was considered. Initial estimates were that about 2,000 of the Commission's 9,000 licensees are waste generators who might make waste shipments. Waste generators must provide more complete information on the manifest than is currently required to meet DOT shipping paper requirements and must report on investigations of missing shipments. The additional information required in the manifest includes the identities of solidification agents; presence of any chelating agents; whether the waste is Class A, B, or C; and the total quantity of H-3, C-14, Tc-99, and I-129. The annual public burden for all licensees should be no more than about 4,500 staff hours for the preparation of the manifest instead of just preparation of DOT shipping papers and 1,000 hours for investigating and reporting on late or missing shipments. Reactor licensees, who are not small entitites, ship at least half the waste now shipped to disposal sites. The remainder is shipped by hospitals, universities, industrial firms, etc., who may or may not be small entities. Thus, less than half this burden should fall on small entities based on relative volumes of wastes shipped. The waste classification and characteristics portion of the rule does provide relief for most wastes produced by the small entities, i.e., Class A wastes. Where radiological hazard permits, segregated disposal has been provided as an option to complying with more restrictive waste acceptance requirements for Class B and C wastes.

The incremental burdens were initially judged small. Based on further staff evaluations and public comments on the rule, this initial judgment was correct and the rule will not have a significant economic impact. The rulemaking will not affect economic factors such as employment, business viability, or ability of affected entities to compete. The improvements in waste disposal practices and the contribution of those improvements to establishing new disposal capacity are judged to significantly outweigh the small economic impact on small entities.

List of Subjects in 10 CFR Part 61

Low-level waste, Nuclear materials, Penalty, Waste treatment and disposal.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and section 553 of title 5 of the United States Code, the following new 10 CFR Part 61 and the following amendments to 10 CFR Parts 2, 19, 20, 21, 30, 40, 51, 70, 73, and 170 to Chapter 1 of Title 10, of the Code of Federal Regulations are published as a document subject to codification.

49 FR 9352
Published 3/12/84
Effective: Upon approval of OMB or 6/7/84.

Environmental Protection Regulations for Domestic Lincensing and Related Regulatory Functions and Related Conforming Amendments

See Part 51 Statements of Consideration

49 FR 24512
Published 6/14/84
Effective 6/7/84

Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions and Related Conforming Amendments

See Part 2 Statements of Consideration

PART 70 DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL ★

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50 FR 12221

Authority: Secs. 51, 53, 161, 182, 183, 68 Stat. 929, 930, 948, 953, 954, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2071, 2073, 2201, 2232, 2233, 2282); secs. 201, as amended, 202, 204, 206, 88 Stat. 1242, as amended, 1244, 1245, 1246 (42 U.S.C. 5841, 5842, 5845, 5846).

Section 70.7 also issued under Pub. L. 95–601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 70.21(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 70.31 also issued under sec. 57d, Pub. L. 93–377, 88 Stat. 475 (42 U.S.C. 2077). Section 70.36 and 70.44 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 70.61 also issued under secs. 186, 187, 68 Stat. 955 (42 U.S.C. 2236, 2237). Section 70.62 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273): §§ 70.3, 70.19(c), 70.21(c), 70.22 (a), (b), (d)–(k), 70.24 (a) and (b), 70.32 (a) (3), (5), (6), (d) and (i), 70.36, 70.39 (b) and (c), 70.41(a), 70.42 (a) and (c), 70.56, 70.57 (b), (c), and (d), 70.58 (a)–(g)(3), and (h)–(j) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 70.7, 70.20a (a) and (d), 70.20b (c) and (e), 70.21(c), 70.24(b), 70.32 (a)(6), (c), (d), (e) and (g), 70.36, 70.51(c)–(g), 70.56, 70.57 (b) and (d) and 70.58 (a)–(g)(3) and (h)–(j) are issued under sec. 161, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 70.20b (d) and (e), 70.38, 70.51 (b) and (i), 70.52, 70.53, 70.54, 70.55, 70.58 (g)(4), (k), and (l) and 70.39, and 70.60 (b) and (c) are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

GENERAL PROVISIONS

45 FR 14199

§ 70.1 Purpose.

(a) Except as provided in paragraph (c) of this section, the regulations of this part establish procedures and criteria for the issuance of licenses to receive title to, own, acquire, deliver, receive, possess, use, and initially transfer special nuclear material; and establish and provide for the terms and conditions upon which the Commission will issue such licenses.

40 FR 8774

(b) The regulations contained in this part are issued pursuant to the Atomic Energy Act of 1954, as amended (68 Stat. 919) and Title II of the Energy Reorganization Act of 1974 (88 Stat. 1242).

40 FR 8774
45 FR 74693

(c) The regulations in Part 72 of this chapter establish requirements, procedures, and criteria for the issuance of licenses to possess spent fuel and other radioactive materials associated with spent fuel storage in an independent spent fuel storage installation (ISFSI) and the terms and conditions under which the Commission will issue such licenses.

21 FR 764

§ 70.2 Scope.

Except as provided in §§ 70.11 to 70.13, inclusive, the regulations in this part apply to all persons in the United States.

43 FR 6915

§ 70.3 License requirements.

No person subject to the regulations in this part shall receive title to, own, acquire, deliver, receive, possess, use, or transfer special nuclear material except as authorized in a license issued by the Commission pursuant to these regulations.

21 FR 764

§ 70.4 Definitions.

As used in this part:

(a) "Act" means the Atomic Energy Act of 1954 (68 Stat 919), including any amendments thereto;

45 FR 14199

(a–1) "Department" and "Department of Energy" means the Department of Energy Organization Act (Pub. L. 95–91, 91 Stat. 565, 42 U.S.C. 7101 *et seq.*), to the extent that the Department, or its duly authorized representatives, exercises functions formerly vested in the U.S. Atomic Energy Commission, its Chairman, members, officers and components and transferred to the U.S. Energy Research and Development Administration and to the Administrator thereof pursuant to sections 104(b), (c) and (d) of the Energy Reorganization Act of 1974 (Pub. L. 93–438, 88 Stat. 1233 at 1237, 42 U.S.C. 5814) and retransferred to the Secretary of Energy pursuant to section 301(a) of the Department of Energy Organization Act (Pub. L. 95–91, 91 Stat. 565 at 577–578, 42 U.S.C. 7151).

21 FR 764

(b) "Atomic energy" means all forms of energy released in the course of nuclear fission or nuclear transformation;

(c) "Atomic weapon" means any device utilizing atomic energy, exclusive of the means for transporting or propell-

ing the device (where such means is a separable and divisible part of the device), the principal purpose of which is for use as, or for development of, a weapon, a weapon prototype, or a weapon test device;

(d) "Commission" means the Nuclear Regulatory Commission or its duly authorized representatives;

(e) "Common defense and security" means the common defense and security of the United States;

(f) "Government agency" means any executive department, commission, independent establishment, corporation, wholly or partly owned by the United States of America which is an instrumentality of the United States, or any board, bureau, division, service, office, officer, authority, administration, or other establishment in the executive branch of the Government;

(g) "License", except where otherwise specified, means a license issued pursuant to the regulations in this part;

(h) "Person" means (1) any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, Government agency other than the Commission or the Department, except that the Department shall be considered a person within the meaning of the regulations in this part to the extent that its facilities and activities are subject to the licensing and related regulatory authority of the Commission pursuant to section 202 of the Energy Reorganization Act of 1974 (88 Stat. 1244),[9] any State or any political subdivision of or any political entity within a State, any foreign government or nation or any political subdivision of any such government or nation, or other entity; and (2) any legal successor, representative, agent, or agency of the foregoing;

(i) "Produce", when used in relation to special nuclear material, means (1) to manufacture, make, produce, or refine special nuclear material; (2) to separate special nuclear material from other substances in which such material may be contained; or (3) to make or to produce new special nuclear material;

(j) "Research and development" means (1) theoretical analysis, exploration, or experimentation; or (2) the extension of investigative findings and theories of a scientific or technical nature into practical application for experimental and demonstration purposes, including the experimental production and testing of models, devices, equipment, materials, and processes;

(k) "Restricted Data" means all data concerning (1) design, manufacture or utilization of atomic weapons; (2) the production of special nuclear material; or (3) the use of special nuclear material in the production of energy, but shall not include data declassified or removed from the Restricted Data category pursuant to section 142 of the Act;

(l) "Source material" means source material as defined in section 11z. of the Act and in the regulations contained in Part 40 of this chapter;

(m) "Special nuclear material" means (1) plutonium, uranium 233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of section 51 of the act, determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing but does not include source material;

(n) "United States", when used in a geographical sense, includes Puerto Rico and all territories and possessions of the United States.

(o) "Agreement State" as designated in Part 150 of this chapter means any State with which the Commission has entered into an effective agreement under subsection 274b. of the Act. "Non-agreement State" means any other State.

(p) [Deleted 40 FR 8774.]

(q) "Sealed source" means any special nuclear material that is encased in a capsule designed to prevent leakage or escape of the special nuclear material.

(r) "Plutonium processing and fuel fabrication plant" means a plant in which the following operations or activities are conducted: (1) Operations for manufacture of reactor fuel containing plutonium including any of the following: (i) Preparation of fuel material; (ii) formation of fuel material into desired shapes; (iii) application of protective cladding; (iv) recovery of scrap material; and (v) storage associated with such operations; or (2) research and development activities involving any of the operations described in paragraph (r) (1) of this section, except for research and development activities utilizing unsubstantial amounts of plutonium.

(s) "Commencement of construction" means any clearing of land, excavation, or other substantial action that would adversely affect the natural environment of a site but does not include changes desirable for the temporary use of the land for public recreational uses, necessary borings to determine site characteristics or other preconstruction monitoring to establish background information related to the suitability of a site or to the protection of environmental values.

(t) "Effective kilograms of special nuclear material" means: (1) For plutonium and uranium-233 their weight in kilograms; (2) For uranium with an enrichment in the isotope U-235 of 0.01 (1%) and above, its element weight in kilograms multiplied by the square of its enrichment expressed as a decimal weight fraction; and (3) For uranium with an enrichment in the isotope U-235 below 0.01 (1%), by its element weight in kilograms multiplied by 0.0001.

(u) Special nuclear material scrap means the various forms of special nuclear material generated during chemical and mechanical processing, other than recycle material and normal process intermediates, which are unsuitable for use in their present form, but all or part of which will be used after further processing.

(v) "Transient shipment" means a shipment of nuclear material, originating and terminating in foreign countries, on a vessel or aircraft which stops at a United States port.

(w) "Irretrievable well-logging source" means any sealed source containing licensed material that is pulled off or not connected to the wireline that suspends the source in the well and for which all reasonable effort at recovery has been expended.

[9] The Department facilities identified in section 202 are:

(1) Demonstration Liquid Metal Fast Breeder reactors when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(2) Other demonstration nuclear reactors, except those in existence on January 19, 1975, when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(3) Facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from licensed activities.

(4) Retrievable Surface Storage Facilities and other facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive waste generated by the Department, which are not used for, or are part of, research and development activities.

21 FR 764 · 45 FR 14199 · 41 FR 21627 · 45 FR 1895 · 29 FR 5683 · 32 FR 2364 · 36 FR 17573 · 37 FR 5745 · 38 FR 30542 · 39 FR 37765 · 46 FR 12193 · 48 FR 39036

(x) "Strategic special nuclear material" means uranium-235 (contained in uranium enriched to 20 percent or more in the U^{235} isotope), uranium-233, or plutonium.

(y) "Formula quantity" means strategic special nuclear material in any combination in a quantity of 5000 grams or more computed by the formula, grams = (grams contained U^{235} + 2.5 (grams U^{233} + grams plutonium).

(z) "Special nuclear material of moderate strategic significance" means:

(1) Less than a formula quantity of strategic special nuclear material but more than 1000 grams of uranium-235 (contained in uranium enriched to 20 percent or more in the U^{235} isotope) or more than 500 grams of uranium-233 or plutonium or in a combined quantity of more than 1000 grams when computed by the equation, grams = (grams contained U^{235}) + 2 (grams U^{233} + grams plutonium); or

(2) 10,000 grams or more of uranium-235 (contained in uranium enriched to 10 percent or more but less than 20 percent in the U^{235} isotope).

(aa) "Special nuclear material of low strategic significance" means:

(1) Less than an amount of special nuclear material of moderate strategic significance, as defined in § 70.4(z)(1), but more than 15 grams of uranium-235 (contained in uranium enriched to 20 percent or more in the U^{235} isotope) or 15 grams of uranium-233 or 15 grams of plutonium or the combination of 15 grams when computed by the equation, grams = (grams contained U^{235}) + (grams plutonium) + (grams U^{233}); or

(2) Less than 10,000 grams but more than 1000 grams of uranium-235 (contained in uranium enriched to 10 percent or more but less than 20 percent in the U^{235} isotope); or

(3) 10,000 grams or more of uranium-235 (contained in uranium enriched above natural but less than 10 percent in the U^{235} isotope).

50 FR 7575

§ 70.5 Communications.

(a) Unless otherwise specified or covered under the regional licensing program as provided in paragraph (b) of this section, any communication or report concerning the regulations in this part and any application filed under these regulations may be submitted to the Commission as follows:

(1) By mail addressed to: Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C.20555.

(2) By delivery in person to the Commission's offices to the Director, Office of Nuclear Material Safety and Safeguards at:

(i) 1717 H Street, N.W., Washington, D.C.; or

(ii) 7915 Eastern Avenue, Willste Building, Silver Spring, Maryland.

49 FR 16030

(b) The Commission has delegated to the five Regional Administrators licensing authority for selected parts of its regional licensing program for nuclear materials as described in paragraph (b)(1) of this section. Any communication, report, or application covered under this licensing program must be submitted as specified in paragraph (b)(2) of this section.

(1) The delegated licensing program including authority to issue, renew, amend, cancel, modify, suspend, or revoke licenses for nuclear materials issued pursuant to 10 CFR Parts 30 through 35, 40 and 70 to all persons except the United States Air Force and Navy for academic, medical, and industrial uses, with the following exceptions:

(i) Activities in the fuel cycle and special nuclear material in quantities sufficient to constitute a critical mass in any room or area. This exception does not apply to license modifications relating to termination of special nuclear material licenses that authorize possession of larger quantities when the case is referred for action from NRC's Headquarters to the Regional Administrators.

(ii) Health and safety design review of sealed sources and devices, and approval, for licensing purposes, of sealed sources and devices.

(iii) Processing of source material for extraction of metallic compounds (including Zirconium, Hafnium, Tantalum, Titanium, Niobium, etc.).

(iv) Distribution of products containing radioactive material to persons exempt pursuant to 10 CFR 32.11 through 32.26.

(v) New uses or techniques for use of byproduct, source or special nuclear material.

50 FR 14692

(2) *Submissions.* (i) *Region I.* With the exception of the United States Air Force and Navy, the regional licensing program involves all Federal facilties in the region and non-Federal licensees in the following Region I non-Agreement States and the District of Columbia: Connecticut, Delaware Maine, Massachusetts, New Jersey, Pennsylvania, and Vermont. All inquiries, communications, and appiications for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region I, Nuclear Material Section B, 631 Park Avenue, King of Prussia, Pennsylvania 19406.

(ii) *Region II.* With the exception of the United States Air Force and Navy, the regional licensing program involves all Federal facilities in the region and non-Federal licensees inthe following Region II non-Agreement States and territories: Virginia, West Virginia, Puerto Rico, and the Virgin Islands. All inquiries, communications, and applications for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region II, Material Radiation Protection Section, 101 Marietta Street, NW, Suite 2900, Atlanta, Georgia 30323.

50 FR 14692

(iii) *Region III.* With the exception of the United States Air Force and Navy, the regional licensing program involves all Federal facilities in the region and non-Federal licensees in the following Region III non-Agreement States: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. All inquiries, communications, and applications for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region III, Material Licensing Section, 799 Roosevelt Road, Glen Ellyn, Illinois 60137.

(iv) Region IV. With the exception of the United States Air Force and Navy, the regional licensing program involves all Federal facilities in the region and non-Federal licensees in the following Region IV non-Agreement States: Montana, Oklahoma, South Dakota, and Wyoming. All inquiries, communications, and applications for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region IV, Material Radiation Protection Section, 611 Ryan Plaza Drive, Suite 1000, Arlington, Texas 76011.

(v) *Region V.* With the exception of the United States Air Force and Navy, the regional licensing program involves all Federal facilities in the region and non-Federal licensees inthe following Region V non-Agreement States and a territory: Alaska, Hawaii, and Guam. All inquiries, communications, and applications for a new license or an amendment or renewal of an existing license specified in paragraph (b)(1) of this section must be sent to: U.S. Nuclear Regulatory Commission, Region V, Material Radiation Protection Section, 1450 Maria Lane, Suite 210, Walnut Creek, California 94596.

50 FR 14692

§ 70.6 Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission.

21 FR 764

§ 70.7 Employee protection.

(a) Discrimination by a Commission licensee, an applicant for a Commission license, or a contractor or subcontractor of a Commission licensee or applicant against an employee for engaging in certain protected activities is prohibited. Discrimination includes discharge and other actions that relate to compensation, terms, conditions, and privileges of employment. The protected activities are established in Section 210 of the Energy Reorganization Act of 1974, as amended, and in general are related to the administration or enforcement of a requirement imposed under the Atomic Energy Act or the Energy Reorganization Act.

(1) The protected activities include but are not limited to—

(i) Providing the Commission information about possible violations of requirements imposed under either of the above statutes;

(ii) Requesting the Commission to institute action against his or her employer for the administration or enforcement of these requirements; or

(iii) Testifying in any Commission proceeding.

(2) These activities are protected even if no formal proceeding is actually initiated as a result of the employee assistance or participation.

(3) This section has no application to any employee alleging discrimination prohibited by this section who, acting without direction from his or her employer (or the employer's agent), deliberately causes a violation of any requirement of the Energy Reorganization Act of 1974, as amended, or the Atomic Energy Act of 1954, as amended.

(b) Any employee who believes that he or she has been discharged or otherwise discriminated against by any person for engaging in the protected activities specified in paragraph (a)(1) of this section may seek a remedy for the

47 FR 30452

discharge or discrimination through an administrative proceeding in the Department of Labor. The administrative proceeding must be initiated within 30 days after an alleged violation occurs by filing a complaint alleging the violation with the Department of Labor, Employment Standards Administration, Wage and Hour Division. The Department of Labor may order reinstatement, back pay, and compensatory damages.

(c) A violation of paragraph (a) of this section by a Commission licensee, an applicant for a Commission license, or a contractor or subcontractor of a Commission licensee or applicant may be grounds for—

(1) Denial, revocation, or suspension of the license.

(2) Imposition of a civil penalty on the licensee or applicant.

(3) Other enforcement action.

(d) Actions taken by an employer, or others, which adversely affect an employee may be predicated upon nondiscriminatory grounds. The prohibition applies when the adverse action occurs because the employee has engaged in protected activities. An employee's engagement in protected activities does not automatically render him or her immune from discharge or discipline for legitimate reasons or from adverse action dictated by nonprohibited considerations.

(e) Each licensee and each applicant shall post Form NRC–3 "Notice to Employees," on its premises. Posting must be at locations sufficient to permit employees protected by this section to observe a copy on the way to or from their place of work. Premises must be posted not later than 30 days after an application is docketed and remain posted while the application is pending before the Commission, during the term of the license, and for 30 days following license termination.

Note.—Copies of Form NRC–3 may be obtained by writing to the Regional Administrator of the appropriate U.S. Nuclear Regulatory Commission Regional Office listed in Appendix D, Part 20 of this chapter or the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

(f) The general licenses provided in §§ 70.19 and 70.20 are exempt from paragraph (e) of this section.

47 FR 30452

§ 70.8 Information collection requirements: OMB approval.

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). OMB has approved information collection requirements contained in this part under control number 3150–0009.

(b) The approved information collection requirements contained in this part appear in §§ 70.19, 70.20a, 70.20b, 70.21, 70.22, 70.24, 70.32, 70.33, 70.34, 70.38, 70.39, 70.51, 70.52, 70.53, 70.57, 70.58, 70.59, and 70.60.

(c) This part contains information collection requirements in addition to those approved under the control number specified in paragraph (a) of this section. These information collection requirements and the control numbers under which they are approved are as follows:

(1) In § 70.21, Form N–71 is approved under control number 3150–0056.

(2) In § 70.38, Form NRC–314 is approved under control number 3150–0028.

(3) In § 70.53, Form NRC–742 is approved under control number 3150–0004.

(4) In § 70.53, Form NRC–742c is approved under control number 3150–0058.

(5) In § 70.54, Form NRC–741 is approved under control number 3150–0003.

49 FR 19623

49 FR 19623

[29 FR 14404]

EXEMPTIONS

[45 FR 65521]

§ 70.11 Persons using special nuclear material under certain Department of Energy and Nuclear Regulatory Commission contracts.

Except to the extent that Department facilities or activities of the types subject to licensing pursuant to section 202 of the Energy Reorganization Act of 1974 are involved,[10] any prime contractor of the Department is exempt from the requirements for a license set forth in section 53 of the Act and from the regulations in this part to the extent that such contractor, under his prime contract with the Department receives title to, owns, acquires, delivers, receives, possesses, uses, or transfers special nuclear material for:

(a) The performance of work for the Department at a United States Government-owned or controlled site, including the transportation of special nuclear material to or from such site and the performance of contract services during temporary interruptions of such transportation; (b) research in, or development, manufacture, storage, testing or transportation of, atomic weapons or components thereof; or (c) the use or operation of nuclear reactors or other nuclear devices in a United States Government-owned vehicle or vessel. In addition to the foregoing exemptions, and subject to the requirement for licensing of Department facilities and activities pursuant to section 202 of the Energy Reorganization Act of 1974, any prime contractor or subcontractor of the Department or the Commission is exempt from the requirements for a license set forth in section 53 of the Act and from the regulations in this part to the extent that such prime contractor or subcontractor receives title to, owns, acquires, delivers, receives, possesses, uses, or transfers special nuclear material under his prime contract or subcontract when the Commission determines that the exemption of the prime contractor or subcontractor is authorized by law; and that, under the terms of the contract or subcontract there is adequate assurance that the work thereunder can be accomplished without undue risk to the public health and safety.

[45 FR 65521] [37 FR 5745]

§ 70.12 Carriers.

Common and contract carriers, freight forwarders, warehousemen, and the U.S. Postal Service are exempt from the regulations in this part to the extent that they transport special nuclear material in the regular course of carriage for another or storage incident thereto. This exemption does not apply to the storage in transit or transport of material by persons covered by the general license issued under § 70.20a and § 70.20b.

[46 FR 1265]

§ 70.13 Department of Defense.

The regulations in this part do not apply to the Department of Defense to the extent that the Department receives, possesses and uses special nuclear material in accordance with the direction of the President pursuant to section 91 of the Act.

[21 FR 764]

§ 70.13a Foreign military aircraft.

The regulations in this part do not apply to persons who carry special nuclear material (other than plutonium) in aircraft of the armed forces of foreign nations subject to 49 U.S.C. 1508(a).

[46 FR 12193]

§ 70.14 Specific exemptions.

(a) The Commission may, upon application of any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

(b) [Reserved] [45 FR 65521]

[46 FR 13971]

(c) The DOE is exempt from the requirements of the regulations in this part to the extent that its activities are subject to the requirements of Part 60 of the chapter.

[47 FR 57446]

(d) Except as specifically provided in Part 61 of this chapter, any licensee is exempt from the requirements of the regulations in this part to the extent that its activities are subject to the requirements of Part 61 of this chapter.

§ 70.15 [Deleted 43 FR 6915.]

GENERAL LICENSES

[29 FR 5883]

§ 70.18 Types of licenses.

Licenses for special nuclear material are of two types: general and specific. Any general license provided in this part is effective without the filing of applications with the Commission or the issuance of licensing documents to particular persons. Specific licenses are issued to named persons upon applications filed pursuant to the regulations in this part.

[43 FR 6915]

§ 70.19 General license for calibration or reference sources.

(a) A general license is hereby issued to those persons listed below to receive title to, own, acquire, deliver, receive, possess, use and transfer in accordance with the provisions of paragraphs (b) and (c) of this section, plutonium in the form of calibration or reference sources:

(1) Any person in a non-agreement State who holds a specific license issued by the Commission or the Atomic Energy Commission which authorizes him to receive, possess, use and transfer byproduct material, source material, or special nuclear material;

(2) Any Government agency, as defined in § 70.4(f), which holds a specific license issued by the Commission or the Atomic Energy Commission which authorizes it to receive, possess, use

[10] The Department facilities identified in section 202 are:

(1) Demonstration Liquid Metal Fast Breeder reactors when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(2) Other demonstration nuclear reactors, except those in existence on January 19, 1975, when operated as part of the power generation facilities of an electric utility system, or when operated in any other manner for the purpose of demonstrating the suitability for commercial application of such a reactor.

(3) Facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from licensed activities.

(4) Retrievable Surface Storage Facilities and other facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive waste generated by the Department, which are not used for, or are part of, research and development activities.

and transfer byproduct material, source material, or special nuclear material; and

(3) Any person in an agreement State who holds a specific license issued by the Commission or the Atomic Energy Commission which authorizes him to receive, possess, use and transfer special nuclear material.

(b) The general license in paragraph (a) of this section applies only to calibration or reference sources which have been manufactured or initially transferred in accordance with the specifications contained in a specific license issued pursuant to § 70.39 or in accordance with the specifications contained in a specific license issued by an agreement State which authorizes manufacture of the sources for distribution to persons generally licensed by the agreement State.

(c) The general license in paragraph (a) of this section is subject to the provisions of §§ 70.32, 70.51, 70.52, 70.55, 70.56, 70.61, 70.62, and 70.71, and to the provisions of Parts 19, 20 and 21 of this chapter. In addition, persons who receive title to, own, acquire, deliver, receive, possess, use or transfer one or more calibration or reference sources pursuant to this general license: 43 FR 6915

(1) Shall not possess at any one time, at any one location of storage or use, more than 5 microcuries of plutonium in such sources;

(2) Shall not receive, possess, use or transfer such source unless the source, or the storage container, bears a label which includes the following statement or a substantially similar statement which contains the information called for in the following statement: [1]

The receipt, possession, use and transfer of this source, Model ——, Serial No. ——, are subject to a general license and the regulations of the United States Nuclear Regulatory Commission or of a State with which the Commission has entered into an agreement for the exercise of regulatory authority. Do not remove this label.

CAUTION—RADIOACTIVE MATERIAL THIS SOURCE CONTAINS PLUTONIUM. DO NOT TOUCH RADIOACTIVE PORTION OF THIS SOURCE.

(Name of Manufacturer or Initial Transferor)

(3) Shall not transfer, abandon, or dispose of such source except by transfer to a person authorized by a license from the Commission or the Atomic Energy Commission or an Agreement State to receive the source.

(4) Shall store such source, except when the source is being used, in a closed container adequately designed and constructed to contain plutonium which might otherwise escape during storage. 29 FR 5883

(5) Shall not use such source for any purpose other than the calibration of radiation detectors or the standardization of other sources.

(d) The general license in paragraph (a) of this section does not authorize the manufacture, import, or export of calibration or reference sources containing plutonium.

§ 70.20 General license to own special nuclear material.

A general license is hereby issued to receive title to and own special nuclear material without regard to quantity. Notwithstanding any other provision of this chapter, a general licensee under this section is not authorized to acquire, deliver, receive, possess, use, transfer, import, or export special nuclear material, except as authorized in a specific license. 33 FR 9809

§ 70.20a General license to possess special nuclear material for transport.

(a) A general license is hereby issued to any person to possess formula quantities of strategic special nuclear material of the types and quantities subject to the requirements of §§ 73.20, 73.25, 73.26, and 73.27 of this chapter and irradiated reactor fuel containing material of the types and quantities subject to the requirements of § 73.37 of this chapter, in the regular course of carriage for another or storage incident thereto. Carriers generally licensed under § 70.20b are exempt from the requirements of this section. Carriers of irradiated reactor fuel for the United States Department of Energy are also exempt from the requirements of this section. The general license is subject to the applicable provisions of §§ 70.7 (a) through (e); 70.32 (a) and (b), and §§ 70.42, 70.52, 70.55, 70.61, 70.62, and 70.71. 47 FR 30452

(b) Notwithstanding any other provision of this chapter, the general license issued under this section does not authorize any person to conduct any activity that would be authorized by a license issued pursuant to Parts 30 through 35, 40, 50, 110, or other sections of this part. 44 FR 26850

(c) Notwithstanding any other provision of this chapter, the duties of a general licensee under this section while in possession of formula quantities of strategic special nuclear material or irradiated reactor fuel in the regular course of carriage for another or storage incident thereto shall be limited to providing for the physical protection of such material against theft or sabotage. Unless otherwise provided by this section, a general license under this section is not subject to the requirements of Parts 19, 20, 70 and 73. 46 FR 12695

(d) Any person who possesses formula quantities of strategic special nuclear material under this general license:

(1) Shall have submitted and received approval of a transportation security plan. The security plan shall outline the procedures that will be used to meet the requirements of §§ 73.20, 73.25, 73.26, 73.27 and 73.70(g) of this chapter including a plan for the selection, qualification, and training of armed escorts, or the specification and design of a specially designed truck or trailer as appropriate. 44 FR 26850

(2) Shall assure that the transportation is in accordance with the applicable physical protection requirements of §§ 73.20, 73.25, 73.26, 73.27 and 73.70(g) of this chapter and the applicable approved transportation security plan.

(3) Shall be subject to § 73.80 of this chapter.

(e) Any person who possesses irradiated reactor fuel under this general license shall: 46 FR 12695

(1) assure or receive certification from the shipper that the transportation is in accordance with the applicable physical protection requirements of § 73.37 of this chapter; and

(2) comply with the reporting requirements of § 73.71 of this chapter.

§ 70.20b General license for carriers of transient shipments of formula quantities of strategic special nuclear material, special nuclear material of moderate strategic significance, special nuclear material of low strategic significance, and irradiated reactor fuel.

(a) A general license is hereby issued to any person to possess transient shipments of the following kinds and quantities of special nuclear material: 50 FR 12221

(1) A formula quantity of special nuclear material of the types and quantities subject to the requirements of §§ 73.20,. 73.25, 73.26 and 73.27 of this chapter;

(2) Special nuclear material of moderate and low strategic significance of the types and quantities subject to the requirements of § 73.67 of this chapter;

(3) Irradiated reactor fuel of the type and quantity subject to the requirements of § 73.37 of this chapter.

[1] Sources generally licensed under this section prior to 1/19/75 may bear labels authorized by the Regulations in effect on 1/1/75.

(b) Persons generally licensed under this section are exempt from the requirements of Parts 19 and 20 of this chapter and the requirements of this part, except §§ 70.32 (a) and (b), 70.52, 70.55, 70.61, 70.62 and 70.71.

(c) Persons generally licensed under this section to possess a transient shipment of special nuclear material of the kind and quantity specified in paragraph (a)(1) of this section shall provide physical protection for that shipment in accordance with or equivalent to §§ 73.20(a), 73.20(b), 73.25, and 73.26 of this chapter and shall comply with the requirements of §§ 73.70(g) and 73.71(b) of this chapter from the time a shipment enters a United States port until it exits that or another U.S. port.

(d) Persons generally licensed under this section to possess a transient shipment of special nuclear material of moderate or low strategic significance of the kind and quantity specified in paragraph (a)(2) of this section shall provide physical protection for that shipment in accordance with or equivalent to § 73.67 of this chapter and shall comply with the requirements of § 73.71(b) of this chapter.

50 FR 12221

(e) Persons generally licensed under this section to possess a transient shipment of irradiated reactor fuel of the kind and quantity specified in paragraph (a)(3) of this section shall provide physical protection for that shipment in accordance with or equivalent to § 73.37 of this chapter and shall comply with the requirements of § 73.71(b) of this chapter.

(f)(1) Persons generally licensed under this section, who plan to carry transient shipments with scheduled stops at United States ports, shall notify in writing the Material Transfer Safeguards Licensing Branch, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

(2) A person generally licensed under this section shall assure that:

(i) The notification will be received at least 10 days before transport of the shipment commences at the shipping facility;

(ii) The Material Transfer Safeguards Licensing Branch has been notified by telephone at 301–427–4186, at least 10 days before transport of the shipment commences at the shipping facility, that an advance shipping notice has been sent by mail; and

(iii) The Material Transfer Safeguards Licensing Branch will be notified by telephone at 301–427–4186 of any changes to the shipment itinerary.

(3) Persons who are generally licensed under paragraph (a)(1) of this section must include the information listed in paragraphs (f)(3) (i) through (ix) of this section. Persons who are generally licensed under § 70.20b(a)(2) and § 70.20b(a)(3) must include the information listed in paragraphs (f)(3) (i) through (viii) of this section.

(i) Location of all scheduled stops in United States territory;

(ii) Arrival and departure times for all scheduled stops in United States territory;

(iii) The type of transport vehicle;

(iv) A physical description of the shipment (elements, isotopes, and enrichments);

(v) The number and types of containers;

(vi) The name and telephone number of the carrier's representative at each stopover location in United States territory;

(vii) The estimated time and date that shipment will commence and that each country (other than the United States) along the route is scheduled to be entered;

(viii) For shipments between countries that are not party to the Convention on the Physical Protection of Nuclear Material, provide assurances, as far as is practicable, that this nuclear material will be protected during international transport at levels described in Annex I to that Convention (see Appendices E and F of Part 73 of this chapter); and

50 FR 12221

(ix) A physical protection plan for implementing the requirement of § 70.20b(c), which will include the use of armed personnel to protect the shipment during the time the shipment is in a United States port.

(g) Persons generally licensed under this section making unscheduled stops at United States ports, immediately after the decision to make an unscheduled stop, shall:

(1) Provide to the Material Transfer Safeguards Licensing Branch, the information required under paragraph (f) of this section.

(2) In the case of persons generally licensed under paragraph (a)(1) of this section, arrange for local law enforcement authorities or trained and qualified private guards to protect the shipment during the stop.

(3) In the case of persons generally licensed under paragraph (a)(2) of this section, arrange for the shipment to be protected as required in § 73.67 of this chapter.

(4) In the case of persons generally licensed under paragraph (a)(3) of this section, arrange for the shipment to be protected as required in § 73.37(e) of this chapter.

(5) Implement these arrangements within a reasonable time after the arrival of the shipment at a United States port to remain in effect until the shipment exits that or another U.S. port.

§ 70.21 Filing.

49 FR 19630

(a)(1) A person may apply for a license to possess and use special nuclear material in a plutonium processing or fuel fabrication plant, by filing 25 copies of the application with the Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

(2) A person may apply for any other license issued under this part, by filing six copies of the application in accordance with the instructions in §70.5.

(3) Information contained in previous applications, statements, or reports filed with the Commission may be incorporated by reference if the references are clear and specific.

21 FR 764

(b) An application for license filed pursuant to the regulations in this part will be considered also as an application for licenses authorizing other activities for which licenses are required by the Act, provided the application specifies the additional activities for which licenses are requested and complies with regulations of the Commission as to applications for such licenses.

(c) Any application which contains Restricted Data shall be prepared in such manner that all Restricted Data are separated from the unclassified information.

(d) Applications and documents submitted to the Commission in connection with applications may be made available for public inspection in accordance with the provisions of the regulations contained in Part 2 of this chapter.

36 FR 145

(e) Each application for a special nuclear material license, other than a license exempted from Part 170 of this chapter, shall be accompanied by the fee prescribed in § 170.31 of this chapter. No fee will be required to accompany an application for renewal or amendment of a license, except as provided in § 170.31 of this chapter.

49 FR 9352

(f) An application for a license to possess and use special nuclear material for processing and fuel fabrication, scrap recovery or conversion of uranium hexafluoride, or for the conduct of any other activity which the Commission has determined pursuant to Subpart A of Part 51 of this chapter will significantly affect the quality of the environment shall be filed at least 9 months prior to commencement of construction of the plant or facility in which the activity will be conducted, and shall be accompanied by an Environmental Report required under Subpart A of Part 51 of this chapter.

[Note removed 49 FR 19623]

49 FR 21699

(g) In response to a written request by the Commission, an applicant for a license to possess and use more than one effective kilogram of special nuclear material shall file with the Commission the installation information described in § 75.11 of this chapter on Form N–71. The applicant shall also permit verification of such installation information by the International Atomic Energy Agency and take such other action as may be necessary to implement the US/IAEA Safeguards Agreement, in the manner set forth in § 75.6 and §§ 75.11 through 75.14 of this chapter.

43 FR 14007

§ 70.22 Contents of applications.

(a) Each application for a license shall contain the following information:

(1) The full name, address, age (if an individual), and citizenship of the applicant and the names and addresses of three personal references. If the applicant is a corporation or other entity, it shall indicate the State where it was incorporated or organized, the location of the principal office, the names, addresses, and citizenship of its principal officers, and shall include information known to the applicant concerning the control or ownership, if any, exercised over the applicant by any alien, foreign corporation, or foreign government;

(2) The activity for which the special nuclear material is requested, or in which special nuclear material will be produced, the place at which the activity is to be performed and the general plan for carrying out the activity;

(3) The period of time for which the license is requested;

(4) The name, amount, and specifications (including the chemical and physical form and, where applicable, isotopic content) of the special nuclear material the applicant proposes to use or produce;

(5) [Reserved]

(6) The technical qualifications, including training and experience of the applicant and members of his staff to engage in the proposed activities in accordance with the regulations in this chapter;

39 FR 39020

(7) A description of equipment and facilities which will be used by the applicant to protect health and minimize danger to life or property (such as handling devices, working areas, shields, measuring and monitoring instruments, devices for the disposal of radioactive effluents and wastes, storage facilities, criticality accident alarm systems, etc.);

(8) Proposed procedures to protect health and minimize danger to life or property (such as procedures to avoid accidental criticality, procedures for personnel monitoring and waste disposal, post-criticality accident emergency procedures, etc.).

50 FR 7575

(b) Each application for a license to possess at any one time and location special nuclear material in a quantity exceeding one effective kilogram of special nuclear material and to use such special nuclear material except those uses involved in the operation of a nuclear reactor licensed pursuant to Part 50 of this chapter and those involved in a waste disposal operation, and as sealed sources, shall contain a full description of the applicant's program for control of and accounting for special nuclear material which will be in the applicant's possession under license, to show how compliance with the requirements of § 70.58 or § 74.31 of this chapter, as applicable, will be accomplished.

(c) [Reserved]

21 FR 764

(d) The Commission may at any time after the filing of the original application, and before the expiration of the license, require further statements in order to enable the Commission to determine whether the application should be granted or denied or whether a license should be modified or revoked. All applications and statements shall be signed by the applicant or licensee or a corporate officer thereof.

(e) Each application and statement shall contain complete and accurate disclosure as to all matters and things required to be disclosed.

36 FR 17573

(f) Each application for a license to possess and use special nuclear material in a plutonium processing and fuel fabrication plant shall contain, in addition to the other information required by this section, a description of the plantsite, a description and safety assessment of the design bases of the principal structure, systems, and components of the plant, including provisions for protection against natural phenomena, and a description of the quality assurance program to be applied to the design, fabrication, construction, testing and operation of the structures, systems, and components of the plant.[2]

44 FR 43280

(g) Each application for a license that would authorize the transport or delivery to a carrier for transport of special nuclear material in an amount specified in § 73.1(b)(2) of this chapter shall include: (1) A description of the plan for physical protection of special nuclear material in transit in accordance with §§ 73.20, 73.25, 73.26, 73.27, and 73.67(a), (e) and (g) for 10 kg or more of special nuclear material of low strategic significance, and § 73.70(g) of this chapter including, as appropriate, a plan for the selection, qualification and training of armed escorts, or the specification and design of a specially designed truck or trailer, and (2) a licensee safeguards contingency plan or response procedures, as appropriate, for dealing with threats, thefts, and industrial sabotage relating to the special nuclear material in transit. Each application for such a license involving formula quantities of strategic special nuclear material shall include the first four categories of information contained in the applicant's safeguards contingency plan. (The first four categories of information, as set forth in Appendix C to 10 CFR Part 73, are Background, Generic Planning Base, Licensee Planning Base, and Responsibility Matrix. The fifth category of information, Procedures, does not have to be submitted for approval.)

44 FR 43280

45 FR 76968

(h) Each application for a license to possess or use at any site or contiguous sites subject to control by the licensee uranium-235 (contained in uranium enriched to 20 percent or more in the uranium-235 isotope), uranium-233, or plutonium alone or in any combination in a quantity of 5,000 grams or more computed by the formula, grams = (grams contained U-235) + 2.5 (grams U-233 + grams plutonium), other than a license for possession or use of such material in the operation of a nuclear reactor licensed pursuant to Part 50 of this chapter, shall include a physical security plan, consisting of two parts. Part I shall address vital equipment, vital areas, and isolation zones, and shall demonstrate how the applicant plans to meet the requirements of §§ 73.20, 73.40, 73.45, 73.46, 73.50, 73.60, 73.70, and 73.71 of this chapter in the conduct of the activity to be licensed including the identification and description of jobs as required by § 11.11(a) of this chapter. Part II shall list tests, inspections, and other means to demonstrate compliance with such requirements.

42 FR 17125

(i) Each application for a license to possess and use special nuclear material for processing and fuel fabrication, scrap recovery, or conversion of uranium hexafluoride shall contain, in addition to the other information required by this section, plans for coping with emergencies.[3]

43 FR 11962

(j) Each application for a license to possess or use at any site or contiguous sites subject to control by the licensee uranium-235 (contained in uranium enriched to 20 percent or more in the uranium-235 isotope), uranium-233, or plutonium alone or in any combination in a quantity of 5,000 grams or more computed by the formula, grams = (grams contained U-235) +

[2] The description of the quality assurance program should include a discussion of how the criteria in Appendix B of Part 50 of this chapter will be met.

[3] Emergency plans shall contain the elements that are listed in Section IV, "Content of Emergency Plans," of Appendix E to Part 50 of this chapter.

43 FR 11962

2.5 (grams U-233 + grams plutonium) other than a license for possession or use of such material in the operation of a nuclear reactor licensed pursuant to Part 50 of this chapter, shall include a licensee safeguards contingency plan for dealing with threats, thefts, and industrial sabotage, as defined in Part 73, relating to nuclear facilities licensed under Part 50 or to the possession of special nuclear material licensed under Part 70 of this chapter. Each application for such a license shall include the first four categories of information contained in the applicant's safeguards contingency plan. (The first four categories of information, as set forth in Appendix C to 10 CFR Part 73, are Background, Generic Planning Base, Licensee Planning Base, and Responsibility Matrix. The fifth category of information, Procedures, does not have to be submitted for approval.

44 FR 43280

(k) Each application for a license to possess or use at any site or contiguous sites subject to control by the licensee special nuclear material of moderate strategic significance or 10 kg or more of special nuclear material of low strategic significance as defined under § 73.2 (x) and (y) of this chapter, other than a license for possession or use of such material in the operation of a nuclear power reactor licensed pursuant to Part 50 of this chapter, shall include a physical security plan which shall demonstrate how the applicant plans to meet the requirements of § 73.67 (d), (e), (f) and (g), as appropriate, of Part 73 of this chapter.

46 FR 51718

(l) Each applicant for a license to possess, use, transport, or deliver to a carrier for transport formula quantities of strategic special nuclear material, who prepares a physical security, safeguards contingency, or guard qualification and training plan shall protect these plans and other related Safeguards Information against unauthorized disclosure in accordance with the requirements of § 73.21 of this chapter.

43 FR 6915

§ 70.23 Requirements for the approval of applications.

(a) An application for a license will be approved if the Commission determines that:

36 FR 17573

(1) The special nuclear material is to be used for the conduct of research or development activities of a type specified in section 31 of the Act,[1] in activities licensed by the Commission under section 103 or 104 of the Act, or for such other uses as the Commission determines to be appropriate to carry out the purposes of the Act;

(2) The applicant is qualified by reason of training and experience to use the material for the purpose requested in accordance with the regulations in this chapter;

(3) The applicant's proposed equipment and facilities are adequate to protect health and minimize danger to life or property;

(4) The applicant's proposed procedures to protect health and to minimize danger to life or property are adequate;

(5) Where the nature of the proposed activities is such as to require consideration by the Commission, that the applicant appears to be financially qualified to engage in the proposed activities in accordance with the regulations in this part;

(6) Where the applicant is required to submit a summary description of the fundamental material controls provided in his procedures for the control of and accounting for special nuclear material pursuant to § 70.22 (b)(2), the applicant's proposed controls are adequate;

49 FR 9352

(7) Where the proposed activity is processing and fuel fabrication, scrap recovery, conversion of uranium hexafluoride, or any other activity which the Commission determines will significantly affect the quality of the environment, the Director of Nuclear Material Safety and Safeguards or his designee, before commencement of construction of the plant or facility in which the activity will be conducted, on the basis of information filed and evaluations made pursuant to Subpart A of Part 51 of this chapter, has concluded, after weighing the environmental, economic, technical, and other benefits against environmental costs and considering available alternatives, that the action called for is the issuance of the proposed license, with any appropriate conditions to protect environmental values. Commencement of construction prior to such conclusion shall be grounds for denial to possess and use special nuclear material in such plant or facility. As used in this paragraph the term "commencement of construction" means any clearing of land, excavation, or other substantial action that would adversely affect the environment of a site. The term does not mean site exploration, necessary roads for site exploration, borings to determine foundation conditions, or other preconstruction monitoring or testing to establish background information related to the suitability of the site or the protection of environmental values.

36 FR 17573

(8) Where the proposed activity is the operation of a plutonium processing and fuel fabrication plant, construction of the principal structures, systems, and components approved pursuant to paragraph (b) of this section has been completed in accordance with the application;

38 FR 30533

(9) Where the applicant is required to submit a plan for physical protection of special nuclear material in transit pursuant to § 70.22(g), of this chapter, the applicant's plan is adequate;

38 FR 30537

(10) Where the applicant is required to submit a physical security plan pursuant to § 70.22(h), the applicant's proposed plan is adequate;

[1] The types of research and development activities specified in section 31 are those relating to:

(1) Nuclear processes;

(2) The theory and production of atomic energy, including processes, materials, and devices related to such production;

(3) Utilization of special nuclear material and radioactive material for medical, biological, agricultural, health or military purposes;

(4) Utilization of special nuclear material, atomic energy, and radioactive material and processes entailed in the utilization or production of atomic energy or such material for all other purposes, including industrial use, the generation of usable energy, and the demonstration of the practical value of utilization or production facilities for industrial or commercial purposes; and

(5) The protection of health and the promotion of safety during research and production activities.

(11) Where the proposed activity is processing and fuel fabrication, scrap recovery, or conversion of uranium hexafluoride, the applicant's proposed emergency plans are adequate.[2]

36 FR 17573

(b) The Commission will approve construction of the principal structures, systems, and components of a plutonium processing and fuel fabrication plant on the basis of information filed pursuant to § 70.22(f) when the Commission has determined that the design bases of the principal structures, systems, and components, and the quality assurance program provide reasonable assurance of protection against natural phenomena and the consequences of potential accidents.[3] Failure to obtain Commission approval prior to beginning of such construction may be grounds for denial of a license to possess and use special nuclear material in a plutonium processing and fuel fabrication plant.

§ 70.24 Criticality accident requirements.

39 FR 39020

(a) Each licensee authorized to possess special nuclear material in a quantity exceeding 700 grams of contained uranium-235, 520 grams of uranium-233, 450 grams of plutonium, 1,500 grams of contained uranium-235 if no uranium enriched to more than 4 percent by weight of uranium-235 is present, 450 grams of any combination thereof, or one-half such quantities if massive moderators or reflectors made of graphite, heavy water or beryllium may be present, shall maintain in each area in which such licensed special nuclear material is handled, used, or stored, a monitoring system meeting the requirements of either paragraph (a)(1) or (a)(2), as appropriate, and using gamma- or neutron-sensitive radiation detectors which will energize clearly audible alarm signals if accidental criticality occurs.

41 FR 31521

This section is not intended to require underwater monitoring when special nuclear material is handled or stored beneath water shielding or to require monitoring systems when special nuclear material is being transported when packaged in accordance with the requirements of Part 71 of this chapter.

39 FR 39020

(1) The monitoring system shall be capable of detecting a criticality that produces an absorbed dose in soft tissue of 20 rads of combined neutron and gamma radiation at an unshielded distance of 2 meters from the reacting material within one minute. Coverage of all areas shall be provided by two detectors.

(2) Persons licensed prior to December 6, 1974, to possess special nuclear material subject to this section may maintain a monitoring system capable of detecting a criticality which generates radiation levels of 300 rems per hour one foot from the source of the radiation. The monitoring devices in the system shall have a preset alarm point of not less than 5 millirems per hour (in order to avoid false alarms) nor more than 20 millirems per hour. In no event may any such device be farther than 120 feet from the special nuclear material being handled, used, or stored; lesser distances may be necessary to meet the requirements of this paragraph (a)(2) on account of intervening shielding or other pertinent factors.

(3) Emergency procedures for each area in which such licensed special nuclear material is handled, used or stored shall be maintained to assure that all personnel withdraw to an area of safety upon the sounding of the alarm. These procedures shall include the conduct of drills to familiarize personnel with the evacuation plan, plans and designation of responsible individuals for determining the cause of the alarm, and placement of radiation survey instruments in accessible locations for use in such an emergency.

41 FR 31521

(b) Each licensee authorized to possess special nuclear material in quantities in excess of those specified in paragraph (a) shall:

(1) Provide the means for identifying quickly which individuals have received doses of 10 rads or more.

(2) Maintain facilities and supplies at the site for decontamination of personnel, arrangements for the services of a physician and other medical personnel qualified to handle radiation emergencies, arrangements for transportation of injured or contaminated individuals to treatment facilities, and arrangements for treatment of individuals at treatment facilities outside the site boundary.

41 FR 31521

(c) Holders of licenses for construction or operation of a nuclear reactor issued pursuant to Part 50 of this chapter, except critical assembly reactors, are exempt for the requirements of paragraph (b) of this section with respect to special nuclear material used or to be used in the reactor.

(d) Any licensee who believes that good cause exists why he should be granted an exemption in whole or in part from the requirements of this section may apply to the Commission for such exemption. Such application shall specify his reason for the relief requested.

LICENSES

§ 70.31 Issuance of licenses.

21 FR 764

(a) Upon a determination that an application meets the requirements of the act and of the regulations of the Commission, the Commission will issue a license in such form and containing such conditions and limitations as it deems appropriate or necessary to effectuate the purposes of the act.

(b) [Deleted 32 FR 4055.]

32 FR 2562

(c) Each license issued to a person for use of special nuclear material in activities in which special nuclear material will be produced shall (subject to the provisions of § 70.41(b)) be deemed to authorize such person to receive title to, own, acquire, receive, possess, use, and transfer the special nuclear material produced in the course of such authorized activities.

32 FR 4055

(d) No license will be issued by the Commission to any person within the United States if the Commission finds that the issuance of such license would be inimical to the common defense and security or would constitute an unreasonable risk to the health and safety of the public.

(e) [Deleted 43 FR 6915.]

[2] Elements listed in Section IV, "Content of Emergency Plans," in 10 CFR Part 50 of this chapter will be used by the Commission in determining the adequacy of such plans.

[3] The criteria in Appendix B of Part 50 of this chapter will be used by the Commission in determining the adequacy of the quality assurance program.

48 FR 32324

§ 70.32 Conditions of licenses.

(a) Each license shall contain and be subject to the following conditions:

(1) [Deleted 32 FR 2562.]

21 FR 764

(2) No right to the special nuclear material shall be conferred by the license except as defined by the license;

(3) Neither the license nor any right under the license shall be assigned or otherwise transferred in violation of the provisions of the Act;

(4) All special nuclear material shall be subject to the right of recapture or control reserved by section 108 and to all other provisions of the Act;

(5) No special nuclear material may be used in any utilization or production facility except in accordance with the provisions of the Act;

(6) The licensee shall not use the special nuclear material to construct an atomic weapon or any component of an atomic weapon;

45FR14199

(7) Except to the extent that the indemnification and limitation of liability provisions of Part 140 of this chapter apply, the licensee will hold the United States and the Department harmless from any damages resulting from the use or possession of special nuclear material leased from the Department by the licensee;

43 FR 6915

(8) The license shall be subject to and the licensee shall observe, all applicable rules, regulations and orders of the Commission.

(b) The Commission may incorporate in any license such additional conditions and requirements with respect to the licensee's ownership, receipt, possession, use, and transfer of special nuclear material as it deems appropriate or necessary in order to:

(1) Promote the common defense and security;

(2) Protect health or to minimize danger to life or property;

(3) Protect Restricted Data;

(4) Guard against the loss or diversion of special nuclear material;

(5) Require such reports and the keeping of such records, and to provide for such inspections, of activities under the license as may be necessary or appropriate to effectuate the purposes of the act and regulations thereunder.

50 FR 7575

(c)(1) Each license authorizing the possession at any one time and location of special nuclear material in a quantity exceeding one effective kilogram of special nuclear material, and the use of such special nuclear material except those uses involved in the operation of a nuclear reactor licensed pursuant to Part 50 of this chapter and those involved in a waste disposal operation and in sealed sources, shall contain and be subject to a condition requiring the licensee to maintain and follow (i) the program for control and accounting for special nuclear material and fundamental material controls described pursuant to §§ 70.22(b), 70.58(l), or 74.31(b) of this chapter, as appropriate; (ii) the measurement control program for special nuclear material control and accounting described pursuant to § 70.57(c), or § 74.31(b) of this chapter, as appropriate; and (iii) such other material control procedures as the Commission determines to be essential for the safeguarding of special nuclear material and providing that the licensee shall make no change which would decrease the effectiveness of the material control and accounting program prepared pursuant to §§ 70.22(b), 70.58(l), 70.51(g), or § 74.31(b) of this chapter, and the measurement control program prepared pursuant to § 70.57(c) or § 74.31(b) of this chapter without the prior approval of the Commission. A licensee desiring to make such changes shall submit an application for amendment to its license pursuant to § 70.34.

48 FR 5886

(2) The licensee shall maintain records of changes to the material control and accounting program made without prior Commission approval, for a period of five years from the date of the change, and shall furnish to the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, with a copy to the appropriate NRC Regional Office shown in Appendix A of Part 73 of this chapter, a report containing a description of each change within:

(i) Two months of the change if it pertains to uranium-233, uranium-235 contained in uranium enriched 20 percent or more in the uranium-235 isotope, or plutonium, except plutonium containing 80 percent or more by weight of the isotope Pu-238, and (ii) Six months of the change if it pertains to uranium enriched less than 20 percent in the uranium-235 isotope, or plutonium containing 80 percent or more by weight of the isotope Pu-238.

(3) Commencing February 9, 1983, licensees in Regions I and II, and commencing on October 1, 1983 licensees in all regions shall furnish the report required by this paragraph to the Regional Administrator of the appropriate NRC Regional Office specified in Appendix A of Part 73 of this chapter, with a copy to the Director of Nuclear Material Safety and Safeguards.

48 FR 5886

(d) The licensee shall make no change which would decrease the effectiveness of the plan for physical protection of special nuclear material in transit prepared pursuant to § 70.22(g)* or § 73.20(c) of this chapter without the prior approval of the Commission. A licensee desiring to make such changes shall submit an application for a change in the technical specifications incorporated in his license, if any, or for an amendment to his license pursuant to § 50.90 or 70.34 of this chapter, as appropriate. The licensee may make changes to the plan for physical protection of special nuclear material without prior Commission approval if these changes do not decrease the effectiveness of the plan. A report containing a description of each change shall be furnished the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, with a copy to the appropriate NRC Regional Office shown in Appendix A of Part 73 of this chapter within two months after the change. Commencing on February 9, 1983, licensees in Regions I and II, and commencing on October 1, 1983 licensees in all regions shall furnish the report required by this paragraph to the Regional Administrator of the appropriate NRC Regional Office specified in Appendix A of Part 73 of this chapter, with a copy to the Director of Nuclear Material Safety and Safeguards.

48 FR 22131

(e) The licensee shall make no change which would decrease the effectiveness of a security plan prepared pursuant to §§ 70.22(h), 70.22(k), or 73.20(c) without the prior approval of the Commission. A licensee desiring to make such a change shall submit an application for an amendment to its license pursuant to § 70.34. The licensee shall maintain records of changes to the plan made without prior Commission approval, for a period of 2 years from the date of the change, and shall furnish to the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, with a copy to the appropriate NRC Regional Office shown in Appendix A of Part 73 of this chapter, a report containing a description of each change within 2 months after the change is made.

*Correction 48 FR 8256

[44 FR 68186]

(f) [Reserved]

[48 FR 5886]

(g) The licensee shall prepare and maintain safeguards contingency plan procedures in accordance with Appendix C of 10 CFR Part 73 for effecting the actions and decisions contained in the Responsibility Matrix of his safeguards contingency plan. The licensee shall make no change that would decrease the safeguards effectiveness of the first four categories of information (Background, Generic Planning Base, Licensee Planning Base, and Responsibility Matrix) contained in any licensee safeguards contingency plan prepared pursuant to § 70.22(g), 70.22(j), 73.30(g)*, or 73.40 of this chapter without the prior approval of the Commission. A licensee desiring to make such a change shall submit an application for an amendment to his license pursuant to § 70.34 of this chapter. The licensee may make changes to the licensee safeguards contingency plan without prior Commission approval if the changes do not decrease the safeguards effectiveness of the plan. The licensee shall maintain records of changes to any such plan made without prior approval for a period of 2 years from the date of the change, and shall furnish to the Director of Nuclear Material Safety and Safeguard, U.S. Regulatory Commission, Washington, D.C. 20555, with a copy to the appropriate NRC Regional Office specified in Appendix A of Part 73 of this chapter, a report containing a description of each change within 2 months after the change is made. Commencing on February 9, 1983 licensees in Regions I and II, and commencing on October 1, 1983 licensees in all regions shall furnish the report required by this paragraph to the Regional Administrator of the appropriate NRC Regional Office specified in Appendix A of Part 73 of this chapter, with a copy to the Director of Nuclear Material Safety and Safeguards.

*Correction 48 FR 8256

(h) (Reserved)

48 FR 32324

(i) Licensees required to submit emergency plans in accordance with § 70.22(i) shall follow and maintain in effect emergency plans approved by the Commission. The licensee may make changes to the approved plans without Commission approval only if such changes do not decrease the effectiveness of the plans and the plans, as changed, continue to meet the requirements of Appendix E, Section IV, 10 CFR Part 50. The licensee shall furnish the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, with a copy to the appropriate NRC Regional Office specified in Appendix D, Part 20 of this chapter, each change within six months after the change is made. Proposed changes that decrease the effectiveness of the approved emergency plan shall not be implemented without prior application to and prior approval by the Commission.

45 FR 55402

(j) Each licensee who possesses a formula quantity of strategic special nuclear material, or who transports, or delivers to a carrier for transport, a formula quantity of strategic special nuclear material or more than 100 grams of irradiated reactor fuel shall ensure that physical security, safeguards contingency, and guard qualification and training plans and other related Safeguards Information are protected against unauthorized disclosure in accordance with the requirements of § 73.21 of this chapter.

46 FR 51718

§ 70.33 Renewal of licenses.

(a) Applications for renewal of a license should be filed in accordance with §§ 70.21 and 70.22. Information contained in previous applications, statements or reports filed with the Commission under the license may be incorporated by reference: *Provided*, That such references are clear and specific.

(b) In any case in which a licensee, not less than thirty (30) days prior to expiration of his existing license, has filed an application in proper form for renewal of a license, such existing license shall not expire until the application for a renewal has been finally determined by the Commission.

§ 70.34 Amendment of licenses.

Applications for amendment of a license shall be filed in accordance with § 70.21(a) and shall specify the respects in which the licensee desires his license to be amended and the grounds for such amendment.

§ 70.35 Commission action on applications to renew or amend.

In considering an application by a licensee to renew or amend his license, the Commission will apply the criteria set forth in § 70.23.

§ 70.36 Inalienability of licenses.

No license granted under the regulations in this part and no right to possess or utilize special nuclear material granted by any license issued pursuant to the regulations in this part shall be transferred, assigned or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of any license to any person unless the Commission shall after securing full information, find that the transfer is in accordance with the provisions of the Act, and shall give its consent in writing.

§ 70.37 Disclaimer of warranties.

Neither the Government nor the Commission makes any warranty or other representation that special nuclear material (a) will not result in injury or damage when used for purposes approved by the Commission, (b) will accomplish the results for which it is requested and approved by the Commission, or (c) is safe for any other use.

21 FR 784

§ 70.38 Expiration and termination of licenses.

(a) Except as provided in § 70.33(b) and paragraph (d)(3) of this section each specific license expires at the end of the day, in the month and year stated in the license.

(b) Each licensee shall notify the Commission immediately, in writing under § 70.5, and request termination of the license when the licensee decides to terminate all activities involving materials authorized under the license. This notification and request for termination of the license must include the reports and information specified in paragraphs (d)(1) (iv) and (v) of this section. The licensee is subject to the provisions of paragraphs (d) and (e) of this section, as applicable.

(c) No less than 30 days before the expiration date specified in a specific license the licensee shall either—

(1) Submit an application for license renewal under § 70.33; or

(2) Notify the Commission, in writing under § 70.5, if the licensee decides not to renew the license.

48 FR 32324

(d)(1) If a licensee does not submit an application for license renewal under § 70.33, the licensee shall, on or before the expiration date specified in the license—

(i) Terminate use of special nuclear material;

(ii) Remove residual radioactive contamination to the extent practicable;

(iii) Properly dispose of special nuclear material;

(iv) Submit a completed form NRC–314; and

(v) Submit a radiation survey report to confirm the absence of radioactive materials or to establish the level of residual radioactive contamination, unless the licensee demonstrates the absence of residual radioactive contamination in some other manner. The licensee shall, as appropriate—

(A) Report levels of radiation in units of microrads per hour of beta and gamma radiation at one centimeter and gamma radiation at one meter from surfaces and report levels of radioactivity in units of disintegrations per minute (or microcuries) per 100 square centimeters removable and fixed on surfaces, microcuries per milliliter in

water, and picocuries per gram in contaminated solids such as soils or concrete; and

(B) Specify the survey instrument(s) used and certify that each instrument is properly calibrated and tested.

(2) If no residual radioactive contamination attributable to activities conducted under the license is detected, the licensee shall submit a certification that no detectable radioactive contamination was found. If the information submitted under this paragraph and paragraphs (d)(1) (iv) and (v) of this section is adequate, the Commission will notify the licensee in writing that the license is terminated.

(3)(i) If detectable levels of residual radioactive contamination attributable to activities conducted under the license are found, the license continues in effect beyond the expiration date, if necessary, with respect to possession of residual special nuclear material present as contamination until the Commission notifies the licensee in writing that the license is terminated. During this time the licensee is subject to the provisions of paragraph (e) of this section. [48 FR 32324]

(ii) In addition to the information submitted under paragraphs (d)(1) (iv) and (v) of this section the licensee shall submit a plan for decontamination, if required, as regards residual radioactive contamination remaining at the time the license expires.

(e) Each licensee who possesses residual special nuclear material under paragraph (d)(3) of this section, following the expiration date specified in the license shall—

(1) Limit actions involving special nuclear material to those related to decontamination and other activities related to preparation for release for unrestricted use; and

(2) Continue to control entry to restricted areas until they are suitable for release for unrestricted use and the Commission notifies the licensee in writing that the license is terminated.

[43 FR 691]

§ 70.39 Specific licenses for the manufacture or initial transfer of calibration or reference sources.

(a) An application for a specific license to manufacture or initially transfer calibration or reference sources containing plutonium, for distribution to persons generally licensed under § 70.19, will be approved if:

(1) The applicant satisfies the general requirements of § 70.23.

(2) The applicant submits sufficient information regarding each type of calibration or reference source pertinent to evaluation of the potential radiation exposure, including:

(i) Chemical and physical form and maximum quantity of plutonium in the source;

(ii) Details of construction and design;

(iii) Details of the method of incorporation and binding of the plutonium in the source;

(iv) Procedures for and results of prototype testing of sources, which are designed to contain more than 0.005 microcurie of plutonium, to demonstrate that the plutonium contained in each source will not be released or be removed from the source under normal conditions of use;

(v) Details of quality control procedures to be followed in manufacture of the source; [29 FR 5883]

(vi) Description of labeling to be affixed to the source or the storage container for the source;

(vii) Any additional information, including experimental studies and tests, required by the Commission to facilitate a determination of the safety of the source. [29 FR 5883]

(3) Each source will contain no more than 5 microcuries of plutonium.

(4) The Commission determines, with respect to any type of source containing more than 0.005 microcurie of plutonium, that:

(i) The method of incorporation and binding of the plutonium in the source is such that the plutonium will not be released or be removed from the source under normal conditions of use and handling of the source; and

(ii) The source has been subjected to and has satisfactorily passed the prototype tests prescribed by paragraph (a)(5) of this section.

(5) For any type of source which is designed to contain more than 0.005 microcurie of plutonium, the applicant has conducted prototype tests, in the order listed, on each of five prototypes of such source, which contains more than 0.005 microcurie of plutonium, as follows:

(i) *Initial measurement.* The quantity of radioactive material deposited on the source shall be measured by direct counting of the source.

(ii) *Dry wipe test.* The entire radioactive surface of the source shall be wiped with filter paper with the application of moderate finger pressure. Removal of radioactive material from the source shall be determined by measuring the radioactivity on the filter paper or by direct measurement of the radioactivity on the source following the dry wipe.

(iii) *Wet wipe test.* The entire radioactive surface of the source shall be wiped with filter paper, moistened with water, with the application of moderate finger pressure. Removal of radioactive material from the source shall be determined by measuring the radioactivity on the filter paper after it has dried or by direct measurement of the radioactivity on the source following the wet wipe.

(iv) *Water soak test.* The source shall be immersed in water at room temperature for a period of 24 consecutive hours. The source shall then be removed from the water. Removal of radioactive material from the source shall be determined by direct measurement of the radioactivity on the source after it has dried or by measuring the radioactivity in the residue obtained by evaporation of the water in which the source was immersed.

(v) *Dry wipe test.* On completion of the preceding tests in paragraphs (a)(5)(i) through (iv) of this section, the dry wipe test described in paragraph (a)(5)(ii) of this section shall be repeated.

(vi) *Observations.* Removal of more than 0.005 microcurie of radioactivity in any test prescribed by this paragraph shall be cause for rejection of the source design. Results of prototype tests submitted to the Commission shall be given in terms of radioactivity in microcuries and percent of removal from the total amount of radioactive material deposited on the source.

(b) Each person licensed under this section shall affix to each source, or storage container for the source, a label which shall contain sufficient information relative to safe use and storage of the source and shall include the following statement or a substantially similar statement which contains the information called for in the following statement.[1]

29 FR 5883

The receipt, possession, use and transfer of this source, Model ——, Serial No. ——, are subject to a general license and the regulations of the United States Nuclear Regulatory Commission or of a State with which the Commission has entered into an agreement for the exercise of regulatory authority. Do not remove this label.

CAUTION—RADIOACTIVE MATERIAL—THIS SOURCE CONTAINS PLUTONIUM. DO NOT TOUCH RADIOACTIVE PORTION OF THIS SOURCE.

43 FR 6915

(Name of Manufacturer or Initial Transferor)

(c) Each person licensed under this section shall perform a dry wipe test upon each source containing more than 0.1 microcurie of plutonium prior to transferring the source to a general licensee under § 70.19. This test shall be performed by wiping the entire radioactive surface of the source with a filter paper with the application of moderate finger pressure. The radioactivity on the paper shall be measured by using radiation detection instrumentation capable of detecting 0.005 microcurie of plutonium. If any such test discloses more than 0.005 microcurie of radioactive material, the source shall be deemed to be leaking or losing plutonium and shall not be transferred to a general licensee under § 70.19.

29 FR 5883

(d) [Revoked 42 FR 43965.]

ACQUISITION, USE AND TRANSFER OF SPECIAL NUCLEAR MATERIAL, CREDITORS' RIGHTS

[1] Sources generally licensed under this section prior to January 19, 1975 may bear labels authorized by the regulations in effect on January 1, 1975.

§ 70.41 Authorized use of special nuclear material.

38 FR 33968

(a) Each licensee shall confine his possession and use of special nuclear material to the locations and purposes authorized in his license. Except as otherwise provided in the license, each license issued pursuant to the regulations in this part shall carry with it the right to receive title to, own, acquire, receive, possess and use special nuclear material. Preparation for shipment and transport of special nuclear material shall be in accordance with the provisions of Part 71 of this chapter.

32 FR 2562

(b) The possession, use and transfer of any special nuclear material produced by a licensee, in connection with or as a result of use of special nuclear material received under his license, shall be subject to the provisions of the license and the regulations in this part.

(c) [Deleted 43 FR 6915.]

§ 70.42 Transfer of special nuclear material.

38 FR 33968

(a) No licensee shall transfer special nuclear material except as authorized pursuant to this section.

(b) Except as otherwise provided in his license and subject to the provisions of paragraphs (c) and (d) of this section, any licensee may transfer special nuclear material:

45FR14199

(1) To the Department;

38 FR 33968

(2) To the agency in any Agreement State which regulates radioactive materials pursuant to an agreement with the Commission or the Atomic Energy Commission under section 274 of the Act, if the quantity transferred is not sufficient to form a critical mass;

(3) To any person exempt from the licensing requirements of the Act and regulations in this part, to the extent permitted under such exemption;

(4) To any person in an Agreement State, subject to the jurisdiction of that State, who has been exempted from the licensing requirements and regulations of that State, to the extent permitted under such exemption;

38 FR 33968

(5) To any person authorized to receive such special nuclear material under terms of a specific license or a general license or their equivalents issued by the Commission or an Agreement State; or

(6) To any person abroad pursuant to an export license issued under Part 110 of this chapter;

(7) As otherwise authorized by the Commission in writing.

38 FR 33968

(c) Before transferring special nuclear material to a specific licensee of the Commission or an Agreement State or to a general licensee who is required to register with the Commission or with an Agreement State prior to receipt of the special nuclear material, the licensee transferring the material shall verify that the transferee's license authorizes receipt of the type, form, and quantity of special nuclear material to be transferred.

(d) The following methods for the verification required by paragraph (c) of this section are acceptable:

(1) The transferor may have in his possession, and read, a current copy of the transferee's specific license or registration certificate;

(2) The transferor may have in his possession a written certification by the transferee that he is authorized by license or registration certificate to receive the type, form, and quantity of special nuclear material to be transferred, specifying the license or registration certificate number, issuing agency and expiration date;

(3) For emergency shipments the transferor may accept oral certification by the transferee that he is authorized by license or registration certificate to receive the type, form, and quantity of special nuclear material to be transferred, specifying the license or registration certificate number, issuing agency and expiration date: *Provided*, That the oral certification is confirmed in writing within 10 days;

(4) The transferor may obtain other sources of information compiled by a reporting service from official records of the Commission or the licensing agency of an Agreement State as to the identity of licensees and the scope and expiration dates of licenses and registrations; or

(5) When none of the methods of verification described in paragraphs (d) (1) to (4) of this section are readily available or when a transferor desires to verify that information received by one of such methods is correct or up-to-date, the transferor may obtain and record confirmation from the Commission or the licensing agency of an Agreement State that the transferee is licensed to receive the special nuclear material.

38 FR 33968

[Deleted 32 FR 4055.]

32 FR 2562

§ 70.44 Creditor regulations.

(a) Pursuant to section 184 of the Act, the Commission consents, without individual application, to the creation of any mortgage, pledge, or other lien upon any special nuclear material, not owned by the United States, which is subject to licensing: *Provided:*

(1) That the rights of any creditor so secured may be exercised only in compliance with and subject to the same requirements and restrictions as would apply to the licensee pursuant to the provisions of the license, the Atomic Energy Act of 1954, as amended, and regulations issued by the Commission pursuant to said Act; and

(2) That no creditor so secured may take possession of the special nuclear material pursuant to the provisions of this section prior to either the issuance of a license by the Commission authorizing such possession or the transfer of a license pursuant to § 70.36.

(b) Nothing contained in this section shall be deemed to affect the means of acquiring, or the priority of, any tax lien or other lien provided by law.

(c) As used in this section, "creditor" includes, without implied limitation, the trustee under any mortgage, pledge, or lien on special nuclear material made to secure any creditor, any trustee or receiver of the special nuclear material appointed by a court of competent jurisdiction in any action brought for the benefit of any creditor secured by such mortgage, pledge, or lien, any purchaser of such special nuclear material at the sale thereof upon foreclosure of such mortgage, pledge, or lien or upon exercise of any power of sale contained therein, or any assignee of any such purchaser.

SPECIAL NUCLEAR MATERIAL CONTROL, RECORDS, REPORTS AND INSPECTIONS

38 FR 30642

§ 70.51 Material balance, inventory, and records requirements.

(a) As used in this section:

(1) "Additions to material in process" means receipts that are opened except for receipts opened only for sampling and subsequently maintained under tamper-safing, and opened sealed sources.

(2) "Enrichment category" for uranium-235 means high-enriched uranium—that uranium whose isotope content is 20 percent or more uranium-235 by weight, and low-enriched uranium—that uranium whose isotope content is less than 20 percent uranium-235 by weight.

(3) "Element" means uranium or plutonium.

(4) "Fissile isotope" means (i) uranium-233 or (ii) uranium-235 by enrichment category.

(5) "Limit of error" means the uncertainty component used in constructing a 95 percent confidence interval associated with a quantity after any recognized bias has been eliminated or its effect accounted for.

(6) "Material balance" means a determination of material unaccounted for (MUF) by subtracting ending inventory (EI) plus removals (R) from beginning inventory (BI) plus additions to inventory (A). Mathematically,

$$MUF = BI + A - EI - R$$

(7) "Material in process" means any special nuclear material possessed by the licensee except in unopened receipts, sealed sources, and ultimate product maintained under tamper-safing.

(8) "Physical inventory" means determination on a measured basis of the quantity of special nuclear material on hand at a given time. The methods of physical inventory and associated measurements will vary depending on the material to be inventoried and the process involved.[1]

(9) "Removals from material in process" includes measured quantities of special nuclear material disposed of as discards, encapsulated as a sealed source, or in other ultimate product placed under tamper-safing or shipped offsite.

(10) "Tamper-safing" means the use of devices on containers or vaults in a manner and at a time that ensures a clear indication of any violation of the integrity of previously made measurements of special nuclear material within the container or vault.

[1] Criteria for physical inventories are set out in paragraph (f) of this section.

(11) "Ultimate product" means any special nuclear material in the form of a product that would not be further processed at that licensed location.

(12) "Unopened receipts" means receipts not opened by the licensee, including receipts of sealed sources, and receipts opened only for sampling and subsequently maintained under tamper-safing.

38 FR 30642

(b) Licensees subject to the recordkeeping requirements of § 74.31 of this chapter are exempt from the requirements of § 70.51(b)(1) through (5). Otherwise:

50 FR 7575

(b)(1) Each licensee shall keep records showing the receipt, inventory (including location), disposal, acquisition, and transfer of all special nuclear material in his possession regardless of its origin or method of acquisition.

(2) Records which are required by the regulations in this part or by license condition shall be maintained for the period specified by the appropriate regulation or license condition. If a retention period is not otherwise specified by regulation or license condition, such records shall be maintained until the Commission authorizes their disposition.

(3) Records of receipt, acquisition, or physical inventory, of special nuclear material which must be maintained pursuant to paragraph (b)(1) of this section shall be maintained as long as the licensee retains possession of the material and for five years following transfer of such material. Records of inventory maintained to demonstrate compliance with paragraph (h) of § 70.58 shall be maintained for six months.

43 FR 6915

(4) [Deleted 43 FR 6915.]

(5) Records of transfer of special nuclear material to other persons shall be maintained by the licensee who transferred the material until the Commission authorizes their disposition. Records required by paragraph (e)(1)(v) of this section shall be maintained for five years.

(6) Records of disposal of special nuclear material shall be maintained in accordance with § 20.401(c) of this chapter.

(c) Each licensee who is authorized to possess at any one time special nuclear material in a quantity exceeding one effective kilogram of special nuclear material shall establish, maintain, and follow written material control and accounting procedures which are sufficient to enable the licensee to account for the special nuclear material in his possession under license.

38 FR 30642

(d) Except as required by paragraph (e) of this section, each licensee who is authorized to possess at any one time and location special nuclear material in a quantity totaling more than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, shall conduct a physical inventory of all special nuclear material in his possession under license at intervals not to exceed twelve mont

38 FR 30642

(e) Each licensee who is authorized to possess at any one time special nuclear material in a quantity exceeding one effective kilogram of strategic special nuclear material, or special nuclear material of moderate strategic significance, and to use such special nuclear material for activities other than those involved in the operation of a nuclear reactor licensed pursuant to Part 50 of this chapter or those involved in a waste disposal operation; as sealed sources; or as reactor irradiated fuels involved in research, development, and evaluation programs in facilities other than irradiated fuel reprocessing plants, shall:

50 FR 7575

(1) Maintain procedures which shall include:

(i) Procedures for tamper-safing containers or vaults containing special nuclear material not in process, which include control of access to the devices and records of the date and time of application of each device to a container or vault; unique identification of each such item; inventory records showing the identity, location, and quantity of special nuclear material for all such items; and records of the source and disposition of all such items;

38 FR 32784

(ii) Records of the quantities of special nuclear material added to or removed from the process;

(iii) Inventory records for the quantity of special nuclear material in process;

(iv) Unique identification of items or containers containing special nuclear material in process; inventory records showing the identity, location, and quantity of special nuclear material for all such items; and records of the source and disposition of all such items;

38 FR 30642

(v) Documentation of all transfers of special nuclear material between material balance areas to show identity and quantity of special nuclear material transferred;

(vi) Requirements for authorized signatures on each document for transfer of special nuclear material between material balance areas; and

(vii) Means for control of and accounting for internal transfer documents.

(2) On or before May 6, 1974, and thereafter as necessary to comply with the requirements of paragraph (e)(3) of this section, perform a physical inventory of all special nuclear material in his possession in compliance with the criteria for physical inventories set forth in paragraph (f) of this section.

(3) Conduct physical inventories made in accordance with the criteria for physical inventories set forth in paragraph (f) of this section at intervals determined from the start of the beginning inventory to the start of the ending inventory not to exceed:

(i) 2 calendar months for plutonium except for plutonium containing 80 percent or more by weight of the isotope Pu-238, uranium-233 and for uranium enriched 20 percent or more in the isotope uranium-235 (except as provided in paragraph (e)(3)(ii) of this section); and

(ii) 6 calendar months for uranium enriched less than 20 percent in the isotope uranium-235; for plutonium, U-233 and high-enriched uranium in that portion of an irradiated-fuel reprocessing plant from the dissolver to the first vessel outside of the radiation shielded portion of the process; and for plutonium containing 80 percent or more by weight of the isotope Pu-238;

38 FR 30642

(4) Within 30 calendar days after the start of each ending physical inventory required by paragraph (e)(3) of this section:

(i) Calculate, for the material balance interval terminated by that inventory, the material unaccounted for (MUF) and its associated limit of error for each element and the fissile isotope for uranium contained in material in process;

(ii) Reconcile and adjust the book record of quantity of element and fissile isotope, as appropriate, to the results of the physical inventory;

(iii) Complete and maintain for a period of five years material balance records for each material balance showing the quantity of element and fissile isotope, as appropriate, in each component of the material balance, with the associated limit of error for the material unaccounted for both in terms of absolute quantity of element and fissile isotope and relative to additions to or removals from material in process for the interval, where results of limit of error calculations are recorded in sufficient detail to permit an evaluation of sources of error.

(iv) Complete and maintain for a period of five years a record summarizing the quantities of element and fissile isotope, as appropriate, for ending inventory of material in process, additions to material in process during the material balance interval and removals from the material in process during the material balance interval; and

(v) Complete and maintain for a period of five years a record summarizing the quantities of element and fissile isotope, as appropriate, in unopened receipts (including receipts opened only for sampling and subsequently maintained under tamper-safing), and ultimate products maintained under tamper-safing, or in the form of sealed sources;

(5) Establish and maintain a system of control and accountability such that the limits of error for any material unaccounted for (MUF) ascertained as a result of the material balances made pursuant to paragraph (e)(3) of this section do not exceed (i) 200 grams of plutonium or uranium-233, 300 grams of high enriched uranium or uranium-235 contained in high enriched uranium; or 9,000 grams of uranium-235 contained in low enriched uranium, (ii) those limits specified in the following table, or (iii) other limits authorized by the Commission pursuant to paragraph (e)(6) of this section:

38 FR 30542

Material Type	Limit of Error of MUF on Any Total Plant Inprocess Material Balance[2] Percent
Plutonium element or uranium-233 in a chemical reprocessing plant	1.0
Uranium element and fissile isotope in a reprocessing plant	0.7
Plutonium element, uranium-233, or high enriched uranium element and fissile isotope—all other	0.5
Low-enriched uranium element and fissile isotope—all other	0.5

[2] As a percentage of additions to or removals from material in process, whichever is greater.

Any licensee subject to this paragraph on December 6, 1973, who requests higher limits pursuant to paragraph (e)(6) of this section at the time he submits his program description under the provisions of paragraph (g) of this section is hereby authorized to operate at the higher limits until the application for license or amendment has been finally determined by the Commission;

(6) An applicant or a licensee subject to the requirements of paragraph (e) of this section may request limits higher than those specified in paragraph (e)(5) of this section. The requested higher limits shall be based on considerations such as the type and complexity of process, the number of unit operations, process throughput quantities, process recycle quantities, and the technology available and applicable to the control and accounting of the material in the process. The Commission will approve higher limits if the applicant demonstrates:

(i) That he has made reasonable efforts and cannot meet the limits of error of MUF specified in paragraph (e)(5) of this section; and

(ii) That he has initiated or will initiate a program to achieve improvements in his material control system so as to meet the limits specified in paragraph (e)(5) of this section.

(f) Each licensee subject to the requirements of paragraph (e) of this section shall:

(1) Establish physical inventory procedures to assure that:

(i) The quantity of special nuclear material associated with each item on inventory is a measured value;

(ii) Each item on inventory is listed and identified to assure that all items are listed and that no item is listed more than once;

(iii) Cutoff procedures for transfers and processing are established so that all quantities are inventoried and none are inventoried more than once;

(iv) Cutoff procedures for records and reports are established so that all transfers for the inventory and material balance interval and no others are included in the records; and

(v) Upon completion of the inventory, all book and inventory records, both total plant and material balance area, are reconciled with and adjusted to the physical inventory.

38 FR 30542

(2) Establish inventory procedures for sealed sources and containers or vaults containing special nuclear material that provide for:

(i) Identification and location of all such items;

(ii) Verification of the integrity of the tamper-safing devices for such items;

(iii) Reverification of identity and quantity of contained special nuclear material for each item not tamper-safed, or whose tamper-safing is found to have been compromised;

(iv) Verification of the correctness of the inventory records of identity and location for all such items; and

(v) Documentation in compliance with the requirements of paragraphs (f)(2)(i), (ii), (iii), and (iv) of this section.

(3) Establish inventory procedures for special nuclear material in process that provide for:

(i) Measurement of all quantities not previously measured by the licensee for element and fissile isotope; and

(ii) For all material whose content of element and fissile isotope has been previously measured by the licensee but for which the validity of such previously made measurements has not been assured by tamper-safing, verification of the quantity of contained element and fissile isotope by remeasurement.

(4) Conduct physical inventories according to written inventory instructions for each inventory which shall;

(i) Assign inventory duties and responsibilities;

(ii) Specify the extent to which each material balance area and process is to be shut down, cleaned out, and/or remain static; [3]

(iii) Identify the basis for accepting previously made measurements and their limits of error;

(iv) Designate measurements to be made for inventory purposes and the procedures for making such measurements; and

(v) Identify the means by which material on inventory will be listed to assure that each item is inventoried and that there is no duplication.

(g) Each licensee subject to the requirements of paragraph (e) of this section shall submit to the Atomic Energy Commission for approval by March 6, 1974, a full description of the program intended to be used to enable the licensee to comply with that paragraph and the requirements set forth in paragraph (f) of this section. This program shall be followed by the licensee after May 6, 1974.

(h) Each licensee who determines that the requirements of paragraph (e) of this section will require modifications of his plant or equipment costing $500,000 or more may, by March 6, 1974, apply to the Atomic Energy Commission for an extension of time, not to exceed six additional months, for compliance with those requirements. Each application for extension shall include a description of the modifications to be made, a statement of estimated associated costs with substantiating evidence, and a schedule of the dates when the modifications will be commenced and completed.

38 FR 30542

(i)(1) Records which must be maintained pursuant to this part may be the original or a reproduced copy or microform if such reproduced copy or microform is duly authenticated by authorized personnel and the microform is capable of producing a clear and legible copy after storage for the period specified by Commission regulations.

41 FR 19300

[3] No process shutdown and/or cleanout for inventory is required if requirements with respect to MUF and the limit of error of MUF as specified in paragraph (e)(5)(ii) of this section are met using other inventory methods.

41 FR 18300

(2) If there is a conflict between the Commission's regulations in this part, license condition, or other written Commission approval or authorization pertaining to the retention period for the same type of record, the retention period specified in the regulations in this part for such records shall apply unless the Commission, pursuant to § 70.14, has granted a specific exemption from the record retention requirements specified in the regulations in this part.

41 FR 16445

§ 70.52 Reports of accidental criticality or loss or theft or attempted theft of special nuclear material.

(a) Each licensee shall report immediately to the appropriate NRC Regional Office listed in Appendix A of Part 73 of this chapter by telephone and telegraph, mailgram, or facsimile any case of accidental criticality and any loss, other than normal operating loss, of special nuclear material.

50 FR 7575

(b) Each licensee who possesses 1 gram or more of contained uranium-235, uranium-233, or plutonium shall report any theft or attempted theft according to the requirements set out in § 74.11 of this chapter.

§ 70.53 Material status reports.

(a) (1) Each licensee who is authorized to possess at any one time and location special nuclear material in a quantity totaling more than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, shall complete and submit material balance reports as required by § 74.13(a)(1) of this chapter.

(2) Any licensee who is required to submit routine material status reports pursuant to § 75.35 of this chapter shall follow the requirements set out in § 74.13(a)(2) of this chapter.

(b) Each licensee subject to the requirements of § 70.51(e) shall follow the requirements set out in § 74.13(b) of this chapter.

§ 70.54 Nuclear material transfer reports.

(a) Each licensee who transfers and each licensee who receives special nuclear material shall follow the requirements set out in § 74.15(a) and (b) of this chapter.

(b) Any licensee who is required to submit inventory change reports on DOE/NRC Form-741 pursuant to § 75.34 of this chapter shall follow the requirements set out in § 74.15(c) of this chapter.

25 FR 12730

§ 70.55 Inspections.

(a) Each licensee shall afford to the Commission at all reasonable times opportunity to inspect special nuclear material and the premises and facilities wherein special nuclear material is used, produced, or stored.

32 FR 2562

(b) Each licensee shall make available to the Commission for inspection, upon reasonable notice, records kept by the licensee pertaining to his receipt, possession, use, acquisition, import, export, or transfer of special nuclear material.

44 FR 47918

(c)(1) In the case of fuel cycle facilities where nuclear reactor fuel is fabricated or processed each licensee shall upon request by the Director, Office of Inspection and Enforcement, provide rent-free office space for the exclusive use of Commission inspection personnel. Heat, air conditioning, light, electrical outlets and janitorial services shall be furnished by each licensee. The office shall be convenient to and have full access to the facility and, shall provide the inspector both visual and acoustic privacy.

(2) For a site with a single fuel facility licensed pursuant to Part 70, the space provided shall be adequate to accommodate a full-time inspector, a part-time secretary and transient NRC personnel and will be generally commensurate with other office facilities at the site. A space of 250 square feet either within the site's office complex or in an office trailer or other on site space is suggested as a guide. For sites containing multiple fuel facilities, additional space may be requested to accommodate additional full-time inspector(s). The office space that is provided shall be subject to the approval of the Director, Office of Inspection and Enforcement. All furniture, supplies and communication equipment will be furnished by the Commission.

44 FR 47198

(3) The licensee shall afford any NRC resident inspector assigned to that site, or other NRC inspectors identified by the Regional Director as likely to inspect the facility, immediate unfettered access, equivalent to access provided regular plant employees, following proper identification and compliance with applicable access control meaures for security, radiological protection and personal safety.

40 FR 33651

(7) "Uncertainty" is the extent to which a measurement result is in doubt because of the effects of random error variances and the limits of systematic errors associated with a measurement process, after the measurements result has been corrected for bias.

(8) "Calibration" means the process of determining the numerical relationship between the observed output of a measurement system and the value, based upon reference standards, of the characteristics being measured.

25 FR 1607

§ 70.56 Tests.

Each licensee shall perform, or permit the Commission to perform, such tests as the Commission deems appropriate or necessary for the administration of the regulations in this part, including tests of (a) special nuclear material, (b) facilities wherein special nuclear material is utilized, produced or stored, (c) radiation detection and monitoring instruments, and (d) other equipment and devices used in connection with the production, utilization or storage of special nuclear material.

50 FR 7575

(b) In accordance with § 70.58(f), each licensee who is authorized to possess at any one time and location strategic special nuclear material, or special nuclear material of moderate strategic significance, in a quantity exceeding one effective kilogram and to use such special nuclear material for activities other than those involved in the operation of a nuclear reactor licensed pursuant to Part 50 of this chapter, those involved in a waste disposal operation, or as sealed sources, shall establish and maintain a measurement control program for special nuclear materials control and accounting measurements. Each program function shall be identified and assigned in the licensee organization in accordance with § 70.58(b)(2), and functional organizational relationships shall be set forth in writing in accordance with § 70.58(b)(3). The program shall be described in a manual which shall contain the procedures, instructions, and forms prepared to meet the requirements of this paragraph, including procedures for the preparation, review, approval, and prompt dissemination of any program modifications or changes. The licensee's program shall include the following:

40 FR 33651

§ 70.57 Measurement control program for special nuclear materials control and accounting.

(a) As used in this section:

(1) "Measurement" includes sampling and means the determination of mass, volume, quantity, composition or other property of a material where such determinations are used for special nuclear material control and accounting purposes.

(2) "Measurement system" means all of the apparatus, equipment, instruments and procedures used in performing a measurement.

(3) "Reference standard" means a material, device, or instrument whose assigned value is known relative to national standards or nationally accepted measurement systems.

(4) "Traceability" means the ability to relate individual measurement results to national standards or nationally accepted measurement systems through an unbroken chain of comparisons.

(5) "Random error" refers to the variation encountered in all measurement work, characterized by the random occurrence of both positive and negative deviations from a mean value.

(6) A "systematic error" is a constant unidirectional component of error that affects all members of a data set; its value can, in some instances, be estimated by the deviation of the mean of a measurement process from a reference value. A systematic error whose value has been determined in this manner is called a bias, whose effect can be corrected for.

40 FR 33651

(1) The licensee shall assign responsibility for planning, developing, coordinating, and administering the program to an individual in his organization who has no direct responsibilities for the operation of the analytical laboratory or for the processing of material, holds a position at an organizational level which will permit independence of action and objectivity of decision and has authority to obtain all the information required to monitor and evaluate measurement quality as required by this section.

(2) Provisions shall be made for management reviews to determine the adequacy of the program and to assess the applicability of current procedures and for planned audits to verify conformance with all aspects of the program. These reviews and audits shall be performed at intervals not to exceed 12 months. Audits and reviews shall be performed by trained individuals independent of direct responsibility for the receipt, custody, utilization, measurement, measurement quality and shipment of special nuclear material. The results of reviews and audits shall be recorded and reported to licensee management.

(3) The licensee shall assure that any person who contracts to perform materials control and accounting measurement services conforms with applicable requirements of paragraphs (4) through (8) and (10) through (12) of § 70.57(b). Conformance shall include reporting by the contractor of sufficient error data to allow the licensee to calculate bias corrections and measurement limits of error. All statistical studies shall be reported or references in the measurement report submitted to the licensee, who shall have access to the contractor's supporting control data. The licensee shall perform reviews to determine the adequacy of the contractor's program and audits to verify conformance with all aspects of the program. Reviews and audits shall be performed at intervals not to exceed 12 months. Results shall be documented and reported to licensee management.

40 FR 33651

(4) In order to assure that potential sources of sampling error are identified and that samples are representative, process and engineering tests shall be performed using well characterized materials to establish or to verify the applicability of existing procedures for mixing and for sampling special nuclear materials and for maintaining sample integrity during transport and storage. The program shall assure that such procedures are maintained and followed, and that sampling is included in the procedures for estimating biases, limits for systematic errors, and random error variances.

(5) The program shall include provisions for the review and approval, before use, of written procedures for:

(i) Preparing or acquiring, maintaining, storing and using reference standards,

(ii) Calibrating measurement systems, performing bulk measurements, obtaining samples, and performing compositional analyses,

(iii) Recording, analyzing and reporting the program data and information, and

(iv) Controlling measurement performance.

(6) To assure the adequacy of each measurement system with respect to process flows, sampling and measurement points, and nominal material compositions, engineering analyses and evaluations shall be made of the

design, installation, preoperational tests, calibration, and the operation of each system. Such analyses and evaluations shall be repeated whenever a significant change is made in any component of a system. The results of these analyses and evaluations shall be recorded.

(7) Procedures and performance criteria shall be established for the training, qualifying, and periodic requalifying of all personnel who perform sampling and measurements for materials control and accounting purposes. Qualification results shall be recorded.

(8) The program shall generate current data on the performance of measuring processes, including, as appropriate, values for bias corrections and their uncertainties, random error variances, limits for systematic errors, and other parameters needed to establish the uncertainty of measurements pertaining to materials control and accounting. The program data shall reflect the current process and measurement conditions existing at the time the control measurements are made. Measurements which are not controlled by the program shall not be used for materials control or for accounting purposes. The program shall include:

40 FR 33651

(i) The ongoing use of standards for calibration and control of all applicable measurement systems. Calibrations shall be repeated whenever any significant change occurs in a measurement system or when program data, generated by tests performed at a predetermined frequency, indicate a need for recalibration. Calibrations and tests shall be based upon reference standards.

(ii) A system of control measurements to provide current data for the determination of random error behavior. On a predetermined schedule, the system shall include the replicate analysis of process samples, the replicate weight or volume measurement of bulk quantities of material, and the analysis of replicate process samples.

(9) The program data generated during the current material balance period shall be used for the determination of the limit of error of the plant material balance. Measurement error data collected and used during immediately preceding material balance periods may be combined with current data provided that the measurements are in statistical control, i.e., when repeated samples from the portion of the measurement system under test behave as random samples from a stable probability distribution. Under such conditions, data sets may be combined provided that the parameter estimates based on the current set of data and the previous set of data are not significantly different on the basis of appropriate statistical tests performed at a level of significance of 0.05.

(10) The licensee shall evaluate with appropriate statistical methods all program data and information, and relevant process data used to establish bias corrections and their associated uncertainties, random error variances, limits for systematic error, and other parameters pertaining to special nuclear materials control and accounting measurements, and to control measurement performance pursuant to § 70.58(f). Bias corrections shall be made by an appropriate statistical procedure.

(11) The licensee shall establish and maintain a statistical control system, including control charts and formal statistical procedures, designed to monitor the quality of each type of program measurement. Control chart limits shall be established to be equivalent to levels of significance of 0.05 and 0.001. Whenever control data exceed the 0.05 control limits, the licensee shall investigate the condition and take corrective action in a timely manner. The results of these investigations and actions shall be recorded. Whenever the control data exceed the 0.001 control limits, the measurement system which generated the data shall not be used for material control and accounting purposes until the deficiency has been corrected and the system has been brought into control at the 0.05 control level.

40 FR 33651

(12) A records system shall be provided in which all data, information, reports, and documents generated by the program shall be retained for five years, except for those records pertaining to the training and qualification of personnel who perform measurement activities pursuant to § 70.57(b)(7). Those records shall be retained for two years. Records shall include a summary of the error data utilized in the limit of error calculations performed for each material balance period. The records system shall be organized for efficient retrieval of program information. Each reported result shall be readily relatable to the original measurement data and to all relevant measurement control information, including pertinent calibration data. Records shall be available for NRC inspection.

(c) Applicants and licensees subject to the provisions of paragraph (b) of this section shall submit to the Commission for approval a detailed plan describing the program that will be used to comply with said provisions. The plan submitted shall include the identification of those measurements to be contracted and shall describe the steps the licensee shall take to assure the adequacy of such procedures. Licensee's plans shall be submitted on or before November 11, 1975.

(d) Licensees subject to the provisions of paragraph (b) of this section shall follow the plans submitted pursuant to paragraph (c) of this section after May 11, 1976, or thirty days after the submitted plan is approved by the NRC whichever is later. After May 11, 1976, an applicant subject to the provisions of paragraph (b) of this section shall immediately implement his plan, submitted pursuant to paragraph (c) of this section, following incorporation of said plan as a condition of license.

40 FR 33651

§ 70.58 Fundamental nuclear material controls.

50 FR 7575

(a) Each licensee who is authorized to possess at any time and location strategic special nuclear material, or special nuclear material of moderate strategic significance, in a quantity exceeding one effective kilogram, and to use such special nuclear material except those uses involved in the operation of a nuclear reactor licensed pursuant to Part 50 of this chapter and those involved in a waste disposal operation, and as sealed sources, shall establish, maintain, and follow written material control and accounting procedures in compliance with the fundamental nuclear material control requirements specified in paragraphs (b) through (k) of this section and such other controls as the Commission determines to be essential for the control of and accounting for special nuclear material.

(b) (1) The overall planning, coordination, and administration of the material control and accounting functions for special nuclear materials shall be vested in a single individual at an organizational level sufficient to assure independence of action and objectiveness of decisions. In manufacturing organizations, such individual shall be independent of individuals or units that are solely responsible for production functions.

39 FR 37765

(2) Material control and accounting functions shall be identified and assigned in the licensee organization to provide a separation of functions so that the activities of one individual or organizational unit serve as controls over and checks of the activities of other individuals or organizational units.

(3) Material control and accounting functional and organizational relationships shall be set forth in writing in job descriptions, organizational directives, instructions, procedure manuals, etc. Such documentation shall include position qualification requirements and definitions of authorities, responsibilities, and duties. Delegations of

[Note removed 49 FR 19623]

material control and accounting responsibilities and authority shall be in writing.

(c) A management system shall be established, maintained, and followed to provide for the development, revision, implementation, and enforcement of nuclear material control and accounting procedures. The system shall include:

(1) Provisions for written approval of such procedures and any revisions thereto by the individual with overall responsibility for the material control and accounting function and by licensee plant management.

(2) Provision for a review at least every 12 months of the nuclear material control system by individuals independent of both nuclear material control management and personnel who have direct responsibility for the receipt, custody, utilization, measurement, measurement quality, and shipment of nuclear material. Such a review shall include a review and audit of material control and accounting procedures and practices and an audit of the nuclear material records. The results of the review and audit along with recommendations for improvements shall be documented, reported to the licensee's corporate and plant management, and kept available at the plant for inspection for a period of five years.

(d) Material Balance Areas (MBA) or Item Control Areas (ICA) shall be established for physical and administrative control of nuclear material.

(1) Each MBA shall be an identifiable physical area such that the quantity of nuclear material being moved into or out of the MBA is represented by a measured value determined pursuant to paragraph (e) of this section.

(2) The number of MBAs shall be sufficient to localize nuclear material losses, or thefts and identify the mechanisms.

(3) The custody of all nuclear material within any MBA or ICA shall be the responsibility of a single designated individual.

(4) ICAs shall be established according to the same criteria as MBAs except that control into and out of such areas shall be by item identity and count for previously determined special nuclear material quantities, the validity of which shall be assured by tamper-safing unless the items are sealed sources.

(e) A system shall be established, maintained, and followed for the measurement of all special nuclear material received, produced, transferred between MBAs, transfers from MBAs to ICAs, on inventory, or shipped, discarded, or otherwise removed from inventory and for the determination of the limit of error associated with each such measured quantity except for plutonium-beryllium sources; samples which have been determined by other means to contain less than 10 grams U-235, U-233, or plutonium each; and reactor-irradiated fuels involved in research, development, and evaluation programs in facilities other than irradiated-fuel reprocessing plants. The system shall provide for sufficient measurements to substantiate the quantities of element and isotope measured and the associated limits of error.

(f) A program shall be established, maintained, and followed pursuant to § 70.57(b) for the continuing determination and control of the systematic and random errors of measurement processes at a level commensurate with the requirements of § 70.51(e)(5).

(g) Procedures shall be established, maintained, and followed to:

(1) Assure accurate identification and measurement of the quantities of special nuclear material received and shipped by a licensee;

(2) Review and evaluate shipper-receiver differences on an individual container or lot basis, as appropriate, on a shipment basis, and on a cumulative basis for shipments of like type material;

(3) Take appropriate investigative and corrective action to reconcile shipper-receiver differences that are statistically significant at the 95 percent confidence level except those shipments which involve differences of 50 grams or less of U-235, U-233, or plutonium; and

(4) Maintain records of shipper-receiver difference evaluation, investigations, and corrective actions on file at the plant for a period of five years.

(h) A system of storage and internal handling controls shall be established, maintained, and followed to provide current knowledge of the identity, quantity, and location of all special nuclear material contained within a plant in discrete items and containers. Such a system shall include procedures as specified in § 70.51(e)(1);

(i) Procedures for special nuclear material scrap control shall be established, maintained, and followed to limit the accumulation and the uncertainty of measurement of these materials on inventory. Such procedures shall include:

(1) Identification and classification of special nuclear material scrap;

(2) Regular processing and recovery of scrap so that no item of such scrap generated in the licensee's plant measured with an uncertainty of greater than ±10 percent remains on inventory longer than six months when such scrap contains plutonium, U-233, or uranium enriched 20 percent or more in the isotope U-235 or twelve months when such scrap contains uranium enriched less than 20 percent in the isotope U-235 or plutonium containing 80 percent or more by weight of the isotope Pu-238.

(j) Physical inventory procedures shall be established, maintained, and followed so that special nuclear material balance and their measurement uncertainties can be determined on the basis of measurements in compliance with the material balance and inventory requirements and criteria specified in § 70.51.

(k) A system of records and reports shall be established, maintained, and followed which will provide information sufficient to locate special nuclear material and to close a measured material balance around each material balance area and the total plant, as specified in § 70.51. Such a system shall include:

(1) A centralized accounting system employing double-entry bookkeeping;

(2) Subsidiary accounts for each material balance area and item control area;

(3) Records pertinent to the requirements of § 70.51(e)(1);

(4) Procedures for the reconciliation of subsidiary accounts to control accounts at the end of each accounting period; and

(5) Procedures for reconciliation of control and subsidiary accounts to the results of physical inventories.

(l) Each licensee subject to the requirements of this section shall submit by January 24, 1975, a full description of his program for control of and accounting for special nuclear material in his possession under license to show how compliance with the requirements of this section, except for paragraph (f), will be accomplished. This program shall be followed by the licensee after July 24, 1975, or sixty days after the program is approved by the NRC, whichever is the later.

§ 70.59 Effluent monitoring reporting requirements.

(a) Each licensee authorized to possess and use special nuclear material for processing and fuel fabrication, scrap recovery or conversion of uranium hexafluoride, shall:

41 FR 21627

(1) Submit a report to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter, with copies to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, within 60 days after January 1, 1976, and July 1, 1976, and within 60 days after January 1 and July 1 of each year thereafter, specifying the quantity of each of the principal radionuclides released to unrestricted areas in liquid and gaseous effluents during the previous six months of operation, and such other information as the Commission may require to estimate maximum potential annual radiation doses to the public resulting from effluent releases. If quantities of radioactive materials released during the reporting periods are significantly above the licensee's design objectives previously reviewed as part of the licensing action, the report shall cover this specifically. On the basis of such reports and any additional information the Commission may obtain from the licensee or others, the Commission may from time to time require the licensee to take such action as the Commission deems appropriate.

48 FR 39036

§ 70.60 Well-logging operations using sealed sources.

(a) A licensee may perform well-logging operations with a sealed source only after the licensee executes a written agreement with the well owner or operator that, within thirty (30) days after a well-logging source has been classified as irretrievable, the following requirements will be implemented:

(1) Each irretrievable well-logging source must be immobilized and sealed in place with a cement plug.

(2) A whipstock or other deflection device must be set at some point in the well above the cement plug, unless the cement plug and source are not accessible to any subsequent drilling operations.

(3) A permanent identification plaque, constructed of long lasting material such as stainless steel, brass, bronze, or monel, must be mounted at the surface of the well, unless the mounting of the plaque is not practical. The plaque must contain:

(i) The word "CAUTION";

(ii) A radiation symbol (the color requirement need not be met);

(iii) The date the source was abandoned;

(iv) The name of the well owner or well operator;

(v) The well name and well identification number(s) or other designation;

(vi) An identification of the sealed source(s) by radionuclide and quantity of activity;

(vii) The depth of the source and depth to the top of the plug; and

(viii) An appropriate warning.

(b) When a well-logging source becomes irretrievable, the licensee shall:

(1) Notify the Regional Administrator of the appropriate NRC Regional Office listed in Appendix D of Part 20 of this chapter of the circumstances of the loss by telephone; and

(2) Obtain approval to implement abandonment procedures.

(c) The licensee shall, within 30 days after a well-logging source has been classified as irretrievable, make a report in writing to the appropriate NRC Regional Office listed in Appendix D of Part 20 of this chapter. The licensee shall send a copy of the report to each appropriate State agency that has authority over the particular well-drilling operation. The report must contain the following information:

(1) Date of occurrence.

(2) A description of the irretrievable well-logging source involved, including radionuclide, quantity, and chemical and physical form.

(3) Surface location and identification of well.

(4) Results of efforts to immobilize and seal the source in place.

(5) Depth of source.

(6) Depth of the top of the cement plug.

(7) Depth of the well.

(8) Any other information (e.g., warning statement) contained on the permanent identification plaque.

(9) Notifications made to State agencies.

(10) A brief description of the attempted recovery efforts.

(d) Any licensee or applicant for a license may apply to the Commission for approval of proposed procedures to abandon an irretrievable well-logging source in a manner not otherwise authorized in paragraph (a) of this section.

Modification and Revocation of Licenses

21 FR 764

§ 70.61 Modification and revocation of licenses.

(a) The terms and conditions of all licenses shall be subject to amendment, revision, or modification by reason of amendments to the Atomic Energy Act of 1954, or by reason of rules, regulations or orders issued in accordance with the Act or any amendments thereto;

(b) Any license may be revoked, suspended or modified for any material false statements in the application or any statement of fact required under section 182 of the Act or because of conditions revealed by such application or statement of fact or any report, record, or inspection or other means which would warrant the Commission to refuse to grant a license on an original application, or for failure to construct or operate a facility in accordance with the terms of the construction permit or license, the technical specifications in the application, or for violation of, or failure to observe any of the terms and conditions of the Act, or of any regulation of the Commission.

35 FR 11459

(c) Upon revocation, suspension or modification of a license, the Commission may immediately retake possession of all special nuclear material held by the licensee. In cases found by the Commission to be of extreme importance to the national defense or security, or to the health and safety of the public, the Commission may recapture any special nuclear material held by the licensee prior to any of the procedures provided under section 551-558 of title 5 of the United States Code.

(d) Except in cases of willfulness or those in which the public health, interest or safety requires otherwise, no license shall be modified, suspended or revoked unless, prior to the institution of proceedings therefor, facts or conduct which may warrant such action shall have been called to the attention of the licensee in writing and the licensee shall have been accorded opportunity to demonstrate or achieve compliance with all lawful requirements.

21 FR 764

§ 70.62 Suspension and operation in war or national emergency.

Whenever Congress declares that a state of war or national emergency exists, the Commission, if it finds it necessary to the common defense and security may,

(a) Suspend any license it has issued.

(b) Order the recapture of special nuclear material.

(c) Order the operation of any licensed facility.

(d) Order entry into any plant or facility in order to recapture special nuclear material or to operate the facility. Just compensation shall be paid for any damages caused by recapture of special nuclear material or by operation of any facility, pursuant to this section.

ENFORCEMENT

§ 70.71 Violations.

An injunction or other court order may be obtained prohibiting any violation of any provision of the Atomic Energy Act of 1954, as amended, or Title II of the Energy Reorganization Act of 1974, or any regulation or order issued thereunder. A court order may be obtained for the payment of a civil penalty imposed pursuant to section 234 of the Act for violation of section 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, or 109 of the Act, or section 206 of the Energy Reorganization Act of 1974, or any rule, regulation, or order issued thereunder, or any term, condition, or limitation of any license issued thereunder, or for any violation for which a license may be revoked under section 186 of the Act. Any person who willfully violates any provision of the Act or any regulation or order issued thereunder may be guilty of a crime and, upon conviction, may be punished by fine or imprisonment or both, as provided by law.

40 FR 8774

[Note removed 49 FR 19623]

PART 70 DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

PROPOSED RULE MAKING

43 FR 10370
Published 3/13/78
Comment period expires 5/15/78
(extended to 7/15/78)

Decommissioning Criteria for Nuclear Facilities; Advance Notice of Proposed Rulemaking

See Part 50 Proposed Rule Making.

43 FR 19053
Published 5/3/78
Comment period extended to 7/15/78

Decommissioning Criteria for Nuclear Facilities

See Part 50 Proposed Rule Making.

45 FR 70874
Published 10/27/80
Comment period expires 12/11/80

Exemption of Technetium-99 and Low-Enriched Uranium as Residual Contamination in Smelted Alloys

See Part 30 Statements of Consideration

46 FR 11666
Published 2/10/81
Comments must be received on or before 3/23/81

Comment period extended to 4/22/81
Decommissioning Criteria for Nuclear Facilities; Notice of Availability of Draft Generic Environment Impact Statement

See Part 30 Proposed Rule Making

46 FR 29712
Published 6/3/81
Comments should be submitted on or before August 3, 1981. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before that date.

Upgraded Emergency Preparedness for Certain Fuel Cycle and Materials Licensees

See Part 30 Proposed Rule Making

46 FR 45144
Published 9/10/81
Comments must be received at the NRC
NRC docket room before 11/9/81.

10 CFR Part 70

Material Control and Accounting Requirements for Facilities Possessing Formula Quantities of SSNM

AGENCY: Nuclear Regulatory Commission.

ACTION: Advance Notice of Proposed Rulemaking.

SUMMARY: The Nuclear Regulatory Commission is considering amendments to refocus its Material Control and Accounting (MC&A) regulations that apply to facilities possessing formula quantities of strategic special nuclear material (SSNM). These amendments are being considered for both existing and new fuel processing and fabrication plants. They are not currently being considered for application to any future irradiated fuel reprocessing plants. These amendments also would not apply to waste disposal operations, nuclear reactors, or to users of nuclear material as sealed sources.

Five basic rule options are presented. These include two that emphasize existing inventory control requirements, and three that require material controls with a more timely frequency for detection and resolution of possible material losses. The latter three options also reduce a number of the existing requirements which the staff believes may not be cost-effective. This advance notice informs the public and interested parties concerning the status of this proposed rulemaking effort and invites public comment on issues related to the approaches being considered.

DATES: Comments must be received at the NRC docket room before November 9, 1981.

ADDRESSES: Comments on the advance notice should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch. Comments may also be delivered to Room 1121, 1717 H Street, NW, Washington, D.C. between 8:15 a.m. and 5:00 p.m. Copies of comments received, summary value-impact analysis, and the more detailed preliminary value-impact analysis, may be examined at the Commission's Public Document Room at 1717 H Street NW, Washington, D.C.

FOR FURTHER INFORMATION CONTACT: Mr. R. J. Dube, Section Leader, Technical Issues Section, Regulatory Improvements Branch, Division of Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 (301)427–4161.

SUPPLEMENTARY INFORMATION:

Background and Rulemaking Goals

In response to the Energy Reorganization Act of 1974, Pub. L. 93–438, and subsequent legislation, as well as a number of concerns regarding existing Material Control and Accounting (MC&A) systems over the past several years, the NRC has initiated a rulemaking effort to improve its MC&A regulations. This advance notice solicits public comment concerning the options being considered, prior to promulgation of a proposed rule.

The substantive goals of this proposed rulemaking are to achieve the following:

1. Timely detection of the possible loss of strategic quantities of weapons grade nuclear material;

2. Rapid determination of whether an actual loss of strategic quantities occurred;

3. If an actual loss occurred, facilitating the recovery of the lost material by providing evidence regarding the sources of the loss; and

4. Long-term assurance that no significant loss has occurred.

In developing approaches for achieving these substantive goals, the staff has been guided by the following three administrative goals:

1. Elimination of any superfluous, ineffective or excessively costly requirements;

2. Providing licensees with maximum flexibility in devising the least expensive methods for satisfying the substantive goals;

3. Satisfying congressional direction to pursue MC&A upgrades for special nuclear material (cf., Energy Reorganization Act of 1974, Authorization Act for fiscal year 1980, and the Appropriation Act for fiscal year 1981).

Basic Rulemaking Options

The following five basic options are being considered by the staff:

Option 1: This option is the retention of existing requirements. These existing requirements focus on detailed after-the-fact accounting. Specifically, this option relies primarily on facility-wide inventory accounting and detailed comparisons of material on hand with book values every 60 days. Requirements are not graded by material type and form.

Option 2: This option involves minor modifications to existing requirements. This option would be the same as Option 1 except that it would increase the frequency of physical inventories to every 30 days and require material balance alarms and action criteria on a Material Balance Area (MBA) rather than a facility basis. These changes would improve the timeliness and localization of inventory accounting.

Option 3: This option would be a major reform of present MC&A requirements. It would focus on the use of much more timely (1 to 3 days) material control information and measures while decreasing reliance on detailed after-the-fact inventory accounting. The controls would be graded by material type and form. This option would provide explicitly for protection against multiple insiders.

Option 4: This option is the same as Option 3, except that it would not provide explicitly for protection against multiple insiders. Protection against multiple insiders would be provided indirectly through checks and balances inherent in Option 3 and through the physical protection requirements of 10 CFR Part 73.

Option 5: This option is the same as Option 3, except that it would limit the application of MC&A reforms to new facilities and major modifications to existing facilities. Backfitting of existing plants which continue to operate in essentially the same manner would not be mandatory. However, existing licensees would have the option of voluntarily complying with the reform amendments in lieu of existing requirements.

The detailed requirements of Option 1 are essentially described in §§ 70.51, 70.53, 70.57, and 70.58 of Title 10, Chapter 1, Code of Federal Regulations, supplemented by some guidance documents and license conditions. Since Option 2 is a variation of Option 1, a better understanding of it can be obtained from the same source. However, since the basic approach in Options 3, 4, and 5 of increasing the use of more timely material control information and measures is a significant departure from current regulations, a preliminary working draft of rules representative of Options 3, 4, and 5 has been published as part of this advance notice (hereinafter called the MC&A Reform Amendments). To further facilitate consideration and comments, staff has developed both the following summary of Options 3–5 and an overview comparison of all five options. This comparison is provided in Table 1.

Summary of the Draft MC&A Reform Amendments (Options 3–5)

The draft MC&A Reform Amendments are structured so that they contain a complete set of Material Control and Accounting requirements, except for the measurement control program requirements set forth in 10 CFR 70.57, which would still apply. The scope of the draft amendments is included in § 70.81 for Options 3 and 4, which for Option 5 would be reworded to be applicable only to new facilities and major modifications of existing facilities. The design basis threat, also included in § 70.81, would be the same for Options 3 and 5, but for Option 4 would exclude MC&A requirements to protect against multiple insiders. The structure of the draft amendments highlights three major performance objectives: detection, response, and system overchecks. These are addressed in proposed §§ 70.83, 70.85, and 70.87, respectively. The detection and response sections contain the refocused MC&A requirements. The system overchecks section is generally similar to existing accounting requirements, although some of the less cost-effective requirements have been modified or dropped altogether. The other major section of the proposed amendments (10 CFR 70.89) deals with protection against MC&A system compromise by multiple insiders, and does not apply to Option 4. The following paragraphs briefly describe the most important elements of each of these four major sections of the rule.

Detection

The general aims of the new detection section are: (1) to discover material losses so that response actions may be taken before losses accumulate to strategic quantities; (2) to perform this discovery function in a way that permits (a) localization of losses in time and space, (b) traceability of a loss to a small number of people potentially involved and (c) securing evidence of the cause of the loss; and (3) in the event that the discovery is not made before 5 formula kilograms (FKG) have been lost, to discover the loss in a timely enough fashion to permit loss assessment and search and recovery operations.

Response

The primary aim of response is to provide conclusive evidence regarding the validity of a detection alarm and its cause. The response section includes timely and thorough resolution of detection alarms. This resolution should:

(1) Determine whether an actual loss occurred;

(2) If an actual loss did not occur, determine the cause of alarm, provide supporting evidence, and determine actions needed to correct it and to prevent recurrence;

(3) If an actual loss did occur, determine (a) its extent (how much material); (b) the material form; (c) its localization in time and space (i.e., when did it occur and from what unit or process); (d) how it occurred; and (e) the identities of the personnel who may have had access to the lost material; and

(4) Provide structured information arising from (3) to assist in any post-loss search and recovery operation.

System Overchecks

One of the major changes made by the draft amendments to the existing requirements involves physical inventories. While physical inventories are an important part of the system overchecks section of the draft amendments, the primary role of physical inventories has been refocused from material loss detection to a validation of MC&A system effectiveness. Given this refocusing of the role of inventories, provisions are included to permit inventories to be taken only once a year. This extension of the inventory period would only be permitted upon a demonstration that the new detection systems will function properly. Other modifications to existing requirements are shown in Table 1.

Protection Against Multiple Insiders

This section is applicable to Options 3 and 5 only. It requires the detection and response system to be resistant to compromise by insider conspiracy, falsification, and deceit, and improves upon the current requirements concerning separation of performance of MC&A functions. It also requires redundancy of MC&A data, as needed to assure adequate protection against multiple insiders.

Comparison of the Requirements of the Five Options

As indicated above, Table 1 provides a comparison of the requirements of all five options. This table provides a listing of the substantive differences between the two groupings of options, namely the two options which emphasize existing regulations and the three that represent substantial reformation of those regulations. Within each group the variations are shown through footnotes.

Discussion Topics

NRC is seeking public comment on the options presented in this Federal Register notice. In particular, comments should be focused on the following topics:

1. Which of the options best meets the stated MC&A goals? Are there other basic options which would provide more cost-effective ways of meeting the stated MC&A goals? Please provide specific information regarding any such option.

2. Options 3 through 5 change the emphasis for material loss detection from physical inventories to process monitoring. The primary role of the reduced inventories is changed to be an overcheck on MC&A system effectiveness. We request specific information regarding whether this is likely to result in a more cost-effective utilization of MC&A resources.

3. Is there information available from operating facilities that should be applied to this rulemaking effort? Please provide specific information that indicates that any of the specific existing or draft requirements should be changed. Please recommend changes which would be consistent with achieving the goals of this rulemaking effort.

4. The Commission has determined that the safeguards system should be designed to prevent the theft of SSNM by multiple insiders. Is it adequate to rely on the physical protection system and checks and balances inherent in the material control and accounting system to provide this protection (Options 1, 2, and 4) or should the MC&A system also be designed to assure explicitly that its detection and response capabilities cannot be made ineffective by multiple insiders (Options 3 and 5)?

5. In comparing the various options, are there any other areas that should also be considered by this rulemaking effort? If so, please provide specific suggestions concerning what other areas should be considered. Requirements already considered by the staff, but not included in any of the options, include the following: performing a measured material balance about each control unit; placing as much material as possible in items or measurable form; maintaining a redundant set of accounting records; making physical inventories capable of detecting a 5 formula kg loss with a probability of 90%; limiting cumulative shipper/receiver differences to less than 5 formula kg for any 12 month period; performing independent measurements verification on all effluents and waste shipments; maintaining the cumulative inventory difference (CID) less than its standard deviation over 12 months, and assuring that the trend of CID is toward zero, recovering scrap within an inventory period; and performing three random audits per year. We would invite any specific information which could be used in deciding whether to add these or any other requirements to any rule proposed as a result of this rulemaking effort.

8. We invite comments on whether any of the options would adequately help the NRC and the licensee establish conclusively whether a large material discrepancy is due to measurement bias, random measurement error, non-measurement sources, or diversion. If not, what change in existing or draft rules would be recommended to address this issue?

7. We invite comments concerning which, if any, option provides an appropriate level of detection capability for single thefts of significant quantities of SSNM and for multiple, recurring thefts of small quantities.

8. We invite comments on whether the options have appropriate limits on the number of persons and time span, which would permit an investigation of possible losses to accurately resolve the causes of a detection alarm. Also, are these limits adequate to aid plant investigations and retrieval, if needed?

9. We invite comments on the ability of plantwide detection requirements to provide timely detection of losses from multiple subunits in a facility.

10. A preliminary draft of a value/impact analysis of the draft rule for Option 3 is available at the Commission's Public Document Room at 1717 H Street, NW, Washington, D.C. It includes analyses of various alternative performance criteria. We would invite comments on this draft value/impact analysis, in particular on the size of the model facility, the number of employees involved in MC&A functions; the cost of an employee-year; and the extent of current automation of both MC&A and process control systems. We also invite comments on changes that would be effected by the variations of Options 4 and 5.

11. We invite comments on the values and impacts of Option 2 (monthly inventories and MBA accounting).

12. We invite comments on the values and impacts of Option 1 (that is, continuing existing requirements) to help determine whether there are incremental values and costs associated with the other options described in this Advance Notice.

13. We invite comments on the possible applicability of the proposed rulemaking to reprocessing plants. Specifically, we invite comments on the technical feasibility of achieving the performance goals of the proposed rulemaking if applied to reprocessing facilities, and we invite suggesitons for changing the detailed requirements of the options being considered. We also invite suggestions for additional value-impact analyses associated with the expanded scope. In making these comments, it should be noted that: (a) we anticipate that such application would require changes to options 3 through 5 to consider the radioactivity of such material in such facilities; and (b) existing regulations (option 1) for physical inventory frequency and limit of error are different for reprocessing plants than shown in Table 1.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission hereby certifies that this rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. This advance notice of proposed rulemaking affects only six facilities that fabricate high enriched fuel. The companies that own these facilities do not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act or the Small Business Size Standards set out in regulations issued by the Small Business Administration at 13 CFR Part 121. Since these companies are dominant in their service areas, this proposed rule does not fall within the purview of the Act.

Table 1.—*Comparison of Requirements of Five Options (See Footnotes for Differences Between Options 1 and 2 and Between Options 3, 4, and 5)*

Objectives	Existing regulations and variation (options 1 and 2)	Reform amendments (options 3, 4, and 5)
Early Loss Detection		
Material Loss Alarms	None[1]	1 day for attractive material; 3 days for less attractive material (§ 70.83(a)(2)).
Loss Localization	Within MBA's (normally 1-3 per facility) (§ 70.58(d)(2))	Within control units (normally 10-20 per facility) (§ 70.85(a)(3)(iv)).
Sensitivity: Abrupt Loss	None[1]	99 percent probability of detecting 5 FKG loss within a control unit (§ 70.83(a)(3)). 90 percent probability of detecting 5 FKG loss plantwide (§ 70.83(c)(1)).
Recurring Losses	None	90 percent probability of detecting 5 FKG trickle loss over a one year period (§ 70.83(d)).
Objectives	**Existing regulations**	**Reform amendments**
Response Requirements		
Prompt Assessment of Detection Alarms	None	Prompt check for common errors plus detailed assessment, if needed, within 3 days (§ 70.85(a)(3)).
Identification of Persons Potentially Involved	None	Limit to 12 persons (§ 70.85(a)(3)(v)).
Prompt Assessment of Hoaxes	None	Pre-established method for resolution (§ 70.85(b)).
Reporting of Alarms to NRC	If ID exceeds LEID and 300 gm of HEU, report probable reasons and actions taken or planned (§ 70.53(b)(1))[2].	Report alarms indicating 5 FKG loss and any positive loss indications within 1 hour; report any other unresolved alarms within 3 days (§ 70.85(d)).
Shutdown	None[4]	Control unit shutdown for 5 FKG loss (§ 70.55(e)). No plantwide shutdown for excessive IDs.
Management Control	Custodians responsible for material (§ 70.58(d)(3))	Custodians and operators responsible for material (§ 70.87(a)(3)(ii)).
Selection and Training	Generalized training program for all MC&A personnel and specific training program for sampling and measurement personnel (§ 70.57(b)(7)).	Specific training program for critical positions (§ 70.87(b)).
Licensee Self-Test of Material Control Capabilities	None	Show, by actual tests, that detection and response capabilities can be met (§ 70.87(c)(2)(ii)).
Accounting Overcheck of Material Control Capabilities	Physical inventories required every 2 months[3] (§ 70.51(a)(3)(i))	Physical inventory requirements reduced (possibly only 1 per year) (§ 70.87(d)(2)).
	Element and isotopic balance required	No isotopic balance required (§ 70.87(d)(2)).
	Scrap not measured better than ±10 percent must be recovered within 6 months (§ 70.58(i)(2)).	Licensee has option: either demonstrate that plant LEID is less than 0.4 percent of plant throughput or scrap is measured better than ±10 percent (§ 70.87(d)(4)).
	Evaluate shipper/receiver differences on a container, lot and shipment basis (§ 70.58(i)(2)).	Evaluate only on shipment basis (§ 70.87(d)(3)(ii)).
Collusion Requirements		
Detect Cover-up of Material Loss by Colluding Insiders	No explicit requirements in 10 CFR Part 70. Protection against colluding insiders is provided indirectly through checks and balances inherent in Part 70 and through the physical protection requirements of 10 CFR Part 73.	Protects detection and response capabilities against compromise by colluding insiders (§ 70.89).[6]

[1] Delayed detection through physical inventories (see System Overcheck).
[2] LEID limited to 0.5 percent of plant throughput in existing requirements. MBA limits would be added for Option 2.
[3] In Option 2, Inventory Difference (ID) and Limit of Error (LEID) would be calculated for each MBA.
[4] A 1974 letter from NRC to licensees calls for a reinventory if ID exceeds 1.5 times LEID limit, plus a shutdown/clean-out inventory if ID exceeds 2.0 times LEID limit. In Option 2, significant MBA loss could cause MBA shutdown.
[5] Every 30 days in Option 2.
[6] Not included in Option 4.

Draft MC&A Reform Amendment for Options 3, 4, and 5

Introduction

The following changes to Title 10, Chapter 1, Code of Federal Regulations, Part 70, Domestic Licensing of Special Nuclear Material, constitute the preliminary working draft MC&A Reform Amendments for Options 3, 4, and 5. Differences among the options are indicated by appropriate footnotes.

1. New paragraphs (w) through (kk) would be added to § 70.4 to read as follows:

§ 70.4 Definitions.

* * * * *

(w) "Abrupt" when used in connection with a loss, diversion, or unauthorized movement or placement of SSNM, means a time frame contained within the interval between sequential performances of an abrupt detection material control test which covers the material in question.

(x) "Action threshold" means the critical value of a test statistic above which response actions required by § 70.85(a) must be initiated.

(y) "Control quantity" represents a portion of the plantwide loss detection goal. It means a selected quantity assigned to a control unit that results in the sum of control quantities over a subset of control units not exceeding 5 formula kilograms of SSNM.

(z) "Control unit" means an identifiable segment or segments of processing or storage activities.

(aa) "Detection start time" means the start of the time interval within which a material control test is to be completed.

(bb) "Inventory Difference" (ID) has the same meaning as "material unaccounted for" (MUF), as defined in § 70.51(a)(6).

(cc) "Item control test" means either a check of a random sample of tamper-safed items in a storage area to verify their identities, location and tamper-safe integrity, or a check of encapsulate items undergoing processing to verify that all items that entered the process are accounted for.

(dd) "Material control test" means either (1) an item control test, or (2) a comparison of a measured or observed amount or property of material against a reference value and a procedure for deciding if the discrepancy is too large.

(ee) "Material description category" means a specific category of feed, intermediate or final product material, or scrap, recycle or waste material, containing SSNM based upon characteristics of the material, such as enrichment, element concentration, chemical composition, physical composition, matrix materials, impurities, cladding, or degree of assembly. At the time scrap is introduced into the dissolution stage of a recovery operation it may be counted as a single material description category.

(ff) "Recurring" when used in connection with a loss, diversion, or unauthorized movement or placement of SSNM, means a time frame that exceeds the interval of an abrupt detection material control test which covers the material in question.

(gg) "SSNM Control Team" means the group of persons delegated joint responsibility and authority for controlling and maintaining knowledge of the movement and location of SSNM in their control unit(s).

(hh) "Substitution" means a type of diversion in which some or all of the SSNM is replaced either with material other than SNM or with SNM having a different isotopic composition.

(ii) "Tamper-safing" has the same meaning as defined in § 70.51(a)(10).

(jj) "Type A material" means a material containing greater than 7.5 percent by weight SSNM and considered to be attractive for use in the fabrication of a Clandestine Fissile Explosive. "Attractive" materials are specified in Commission material attractiveness guidance that has been classified as NSI: Confidential, and which is available to persons with appropriate information access authorization—see 10 CFR Part 25.

(kk) "Type B material" means all material containing SSNM other than Type A material.

2. New §§ 70.81, 70.83, 70.85, 70.87, 70.89,[1] and 70.91 would be added to Part 70 to read as follows:

§ 70.81 General performance objective and requirements.

(a) Each [2] licensee who possesses five or more formula kilograms of strategic special nuclear material (SSNM) at any site other than a production or utilization facility licensed pursuant to Part 50 of this chapter, or operations involved in waste disposal, sealed sources, or irradiated fuel reprocessing facilities, shall implement and maintain a Commission approved material and provide high assurance that activities involving strategic special nuclear material are not inimical to the common defense and security, and do not constitute an unreasonable risk to the public health and safety. The following design basis threat, where referenced elsewhere in this part, must be used when designing material control and accounting systems to assure prompt detection and response to covert SSNM diversion:

(1) An individual, including an employee (in any position); and

(2) [3] A conspiracy between individuals in any position who may have:

(i) Access to and detailed knowledge of the facilities subject to this section, or

(ii) Items that could facilitate theft or concealment of the theft of special nuclear material (e.g., small tools, substitute material, false documents, tamper-indicating seals, plant records, etc.), or both.

(b) The material control and accounting system must be designed to protect against the design basis threat as stated in § 70.81(a). To achieve the general performance objective specified in § 70.81(a) a licensee shall establish and maintain a material control and accounting system that provides the capabilities and requirements contained in §§ 70.83, 70.85, 70.87, and 70.89 [3]

(c) Each licensee subject to the requirements of paragraph (a) of this section shall:

(1) [4] No later than 150 days after the effective date of these amendments, submit a revised fundamental nuclear material control plan describing how the licensee will comply with the requirements of paragraph (b) of this section; and

(2) No later than 360 days after the effective date of these amendments or 30 days after the plan submitted pursuant to paragraph (c)(1) of this section is approved, whichever is later, implement and comply with the approved plan except for activities specifically identified by the licensee which involve new construction, significant physical modification of existing structures or major equipment installation, for which 540 days after the effective date of these amendments or 180 days after the plan is approved, whichever is later, will be allowed; and

(3) Make no change which would decrease the effectiveness of the material control and accounting system without prior approval of the Commission.

§ 70.83 Detection capabilities for material control and accounting systems.

To meet the general performance objective and requirements of § 70.81, a

[1] Option 4 excludes the conspiracy threat of § 70.89.

[2] Option 5 differs from this draft text. It reads instead "Each applicant granted a new license or major modification to an existing license to possess . . ."

[3] Option 4 excludes the conspiracy threat of § 70.89.

[4] Option 5 would only apply to new licensees and would not include § 70.81(c)(1) and (2)

material control and accounting system must provide the detection capabilities described in (a) through (d) of this section.

(a) Promptly detect significant abrupt unauthorized movement or placement of SSNM within control units. To achieve this capability the material control and accounting system must:

(1) Establish control units for the physical and administrative control of SSNM so that all SSNM process segments, storage areas, and movements of SSNM within the material access area (MAA) are in some control unit.

(2) Establish material control tests for each control unit that are collectively sensitive to a control quantity loss of SSNM and that include:

(i) Quantitative tests that are sensitive to a loss: (A) without material substitution and (B) with material substitution where credible substitute material is readily available. These tests must be performed within 24 hours of the detection start time for Type A material and within three working days for Type B material.

(ii) Quantitative tests or qualitative visual or property checks for material substitution where credible substitute material is not readily available. If qualitative material control tests are used to check for substitution, back-up quantitative material control tests sensitive to the substitution must be established and performed within five working days of the detection start time for Type A material and within 15 working days for Type B material.

(3) Establish an action threshold, for each non-item quantitative material control test, that meets the following specifications:

(i) The detection probability for a five formula kilogram loss of SSNM must be at least 99 percent; and

(ii) The detection probability for a control quantity loss of SSNM must be at least 90 percent; and

(iii) The false alarm rate of each test must be such that the alarm level will not result in a predicted number of unresolvable false alarms exceeding a total of 2 formula kilograms in one inventory period.

(4) For an item control test the action threshold must be one missing or compromised item and the sample size must be sufficient to meet the specifications delineated in (a)(3) of this section.

(5) Notwithstanding any other requirement of this section, when at least three [8] people have attested to the contents of a tamper-safed item, the contents of that item need not be remeasured again as long as the tamper-safing and tamper-safed item retain their integrities.

(b) Promptly detect unauthorized movements or placement of SSNM in transfers of material between control units. To achieve this capability the material control and accounting system must include procedures that require:

(1) Movement of material to either:

(i) Be completed within the shift in which the movement is initiated; or

(ii) Be contained in structures for which unauthorized access would be detected by violation of containment integrity.

(2) Confirmation of the completion of transfers subject to paragraph (b)(1)(i) of this section, and initiation of a response if the completion of the transfer is not confirmed within the shift in which it was initiated.

(c) Promptly detect abrupt unauthorized movement or placement of five or more formula kilograms of SSNM on a plant wide basis. To achieve this capability the material control and accounting system must:

(1) Provide at least 90 percent probability of detecting losses that total five or more formula kilograms of SSNM on a plantwide basis, where less than five formula kilograms is diverted from any one control unit. The licensee shall do this by the establishment of control quantities and access limitations for each control unit such that each control unit is included in one of the following four categories:

(i) The sum of control quantities over all control units is no greater than five formula kilograms; or

(ii)(A) The sum of control quantities over all control units under the custody of any two SSNM control teams is no greater than five formula kilograms; and

(B) An individual is authorized hands-on access to SSNM only within the area of responsibility of single SSNM control team in any one week; or

(iii)(A) The control quantity for any one control unit is less than five formula kilograms; and

(B) That control unit is isolated from other control units to: *(1)* assure detection of unauthorized access to SSNM in it and *(2)* channel personnel through a search for concealed SSNM prior to exiting that control unit; or

(iv) Any other method which provides an equivalent probability of detection.

(d) Promptly detect a recurring unauthorized movement or placement of SSNM that has accumulated, or could accumulated, to five or more formula kilograms over a period of up to one year, by periodic analyses of the data from each control unit. These periodic analyses must:

(1) Be a least equivalent to the following specifications:

(i) For each appropriate material control test, calculate a cumulative imbalance and a standard deviation of the cumulative imbalance. Maintain an action threshold for detection a five formula kilogram cumulative loss with at least 90 percent probability and initiate response if the cumulative imbalance exceeds that threshold;

(ii) For each quantitative material control test, arrange the data sequentially and analyze the time series for long-term trends. Initiate response if a trend projects to a five formula kilogram loss occurring before the end of the next physical inventory; and

(2) Be performed within one work day for each material control test.

§ 70.85 Response capabilities for material control and accounting systems.

To meet the general performance objective and requirements of § 70.81, a material control and accounting system must provide the response capabilities described in this section.

(a) Respond promptly to internal detection alarms that arise from executing § 70.83 by establishing, documenting, maintaining, and being prepared to implement an internal resolution plan that:

(1) Pre-assigns alarm resolution responsibilities;

(2) Identifies those control units where it would be difficult to resolve an alarm if material processing is allowed to continue after the alarm situation is discovered;

(3) Establishes an assessment method to determine the nature of the alarm. This method must provide for prompt check for common errors. If this check does not resolve the alarm, a more detailed assessment must be made. The prompt checks and detailed assessment must be completed within 72 hours, except in the case of a long-term trend where the detailed assessment must be completed as soon as possible but before the trend reaches five formula kilograms. The checks and assessment method must be established to:

(i) Determine the nature and cause of the alarm;

(ii) Retain evidence required to resolve the losses, particularly for those control units identified in paragraph (a)(2) of this section;

(iii) Determine the time span of the potential material loss;

(iv) Identify the material description and quantity, and the control unit(s) involved. To aid in achieving this, the licensee shall be able to narrow to six or

[8] In Option 4 this should read "two" instead of "three" people.

fewer the number of possible material description categories involved when an alarm is made; and

(v) Identify persons potentially involved. The licensee shall limit to 12 or fewer the number of personnel who need hands-on access to SSNM over the intervals specified in § 70.83(a)(2)(i) for material control tests. Exceptions to this limit are permitted for emergencies; and

(4) Provides for alerting the security supervisor of the unresolved alarm and for coordinating with the security organization during the remaining alarm resolution period, if the check for common errors does not resolve the alarm.

(b) Respond promptly to external alarm by establishing, documenting, and maintaining at least two external alarm assessment plans, and by being prepared to implement them. These plans must vary in the time necessay for their completion and in the detail of information provided. These plans must include:

(1) Pre-assignment of assessment responsibilities;

(2) A pre-established method for:

(i) Determining the presently authorized material locations within the facility;

(ii) Confirming the material presence in those locations; and

(iii) Reviewing material control and accounting for possible loss indications; and

(3) A procedure for implementing the internal alarm resolution plan specified in § 70.85(a) whenever there is a discrepancy indicating a material loss during an external alarm assessment.

(c) As a result of the checks and assessments required in paragraphs 70.85 (a) and (b) above the licensee shall take the following corrective action:

(1) Return out of place SSNM to the appropriate control unit;

(2) Update and correct the appropriate records; and

(3) Modify the MC&A system with the objective of preventing similar occurences in the future.

(d) The above licensee shall report to the appropriate NRC regional office listed in Appendix A of Part 73 of this chapter, as follows:

(1) Within one hour, positive indications of SSNM loss;

(2) Within one hour, alarms that indicate a loss of five formula kilograms or more of SSNM;

(3) Within 72 hours of the alarm, unresolved alarms; and

(4) Within one hour, the results of external alarm assessments.

(e) In the event that a detection alarm indicates a loss of five formula kilograms or more of SSNM, operations in the control unit(s) related to the alarm must be suspended until either the alarm is resolved or until authorization from the Commission is received to resume operations. Suspension of operations must include:

(1) Stopping the introduction of SSNM into the control unit(s), except for vaults; and

(2) Not releasing any SSNM from the control unit(s) for further processing, except to convert the SSNM into a form suitable for measurement and resolution of the alarm.

§ 70.87 System overcheck structure for material control and accounting systems.

To meet the general performance objectives and requirements of § 70.81, a material control and accounting system must provide the system overcheck programs described in this section.

(a) *Management control.* The licensee shall establish, document, maintain, and follow a management program which implements effective management control over material control and accounting activities. The program must:

(1) Define the essential material control and accounting functions and activities;

(2) Document material control and accounting functional relationships, responsibilities and authority; and

(3) Document the identity and assignment of those material control and accounting functions that should be performed independently to assure that the functions performed by one individual, or organizational unit, control or check the functions performed by other individuals or organizational units. As a minimum, the licensee shall:

(i) Assign the overall responsibility for maintaining material control and material accounting, in conformance with §§ 70.83, 70.85, 70.87, 70.89,* and 70.91, to a single individual at an organizational level that assures independence of action and objectiveness of decision. This position must be free of any conflicts of interest with respect to the production function and any other plant functions whose execution may weaken or compromise the material control and accounting system;

(ii) Assign responsibility for material control in each control unit to a designated SSNM control team. Control team responsibilities must include ensuring that SSNM is handled, controlled, measured and accounted for in accordance with prescribed plans and procedures. Measurements of and controls over transfer of responsibility for SSNM from one team to another must be of sufficiently high quality that losses of material can be charged to a single team. The team shall not:

(A) Be responsible for more than three control units;

(B) Include individuals who were members of another SSNM control team within the last week; and

(C) Include personnel other than those responsible for licensed production activities or SSNM control team duties within the control unit.

(iii) Assign responsibility for plant wide material accounting data review to personnel independent of those assigned control responsibility; and

(iv) Assure that material control and accounting procedures and revisions thereto are documented and approved by at least two levels of management knowledgeable in material control and accounting functions and requirements, one of whom must be the individual identified in § 70.87(a)(3)(i).

(b) *Selection and training program.* Each licensee shall establish, document, maintain, and follow a program for the qualification and training of material control and accounting personnel. This program shall ensure that personnel, working in positions involving tasks where error could directly degrade the safeguards capabilities of the MC&A system, are competent and maintain a high level of safeguards awareness. The program must:

(1) Define the essential functions of, and the minimum qualifications for personnel in, these positions;

(2) Assure that staff persons in these such positions are provided with the training necessary to discharge their responsibilities in a knowledgeable manner and that this knowledge is periodically updated;

(3) Assure through testing or other demonstration of competence that staff members have the knowledge they need to perform their jobs correctly; and

(4) Include provisions for making staff members aware of the safeguards importance of their material control and accounting activities and of their being alert to indications of compromise of the material control and accounting system.

(c) *Accountability Monitoring Program.* (1) To ensure and demonstrate that material control and accounting activities are properly designed and implemented, the licensee shall establish a documented accountability monitoring program. This program must ensure through tests, demonstrations, and periodic evaluations of performance, that material control and accounting systems, procedures and components provide reliable

* Option 4 omits § 70.89.

information, not susceptible to falsification, and that they meet established performance standards.

(2) The accountability monitoring program must include:

(i) A quality control program which:

(A) Meets the provisions of § 70.57 for all measurements used in satisfying the provisions of § 70.87(d);

(B) Ensures that the estimate of standard deviation for each material control test reflects the actual operational conditions and error sources; and

(C) Ensures that performance standards for other MC&A procedures and components are met.

(ii) A self-test program which demonstrates, subject to appropriate constraints, that the material control and accounting detection and response capabilities are maintained at the performance levels set in §§ 70.83 and 70.85.

(iii) At least one audit per year, which must cover the material control and accounting records, be performed by knowledgeable personnel and assess the effectiveness of the entire material control and accounting system, particularly the capabilities required by § 70.83 and § 70.85. At a minimum each audit shall be performed by individuals independent of both the licensee's nuclear material control management and personnel who have direct responsibility for the receipt, custody, utilization, measurement, measurement quality, and shipment of nuclear material. In addition:

(A) At least one of any two successive audits shall be unannounced; and

(B) At least one of any two successive audits shall be performed by knowledgeable individuals not employed at the facility.

(iv) Provision for reporting of accountability monitoring program findings to a level of plant management higher than the individual designated under § 70.87(a)(3)(i).

(v) Provision that management responses to deficiencies identified are taken promptly to eliminate identified problems.

(d) *Accounting and Data Analysis Program for SSNM.* (1) Each licensee shall establish, document, maintain, and follow an accounting and data analysis program for SSNM to demonstrate that material control and accounting systems have been effective within certain statistical limits. This accounting and data analysis program for SSNM must:

(i) Provide accurate measurements and written records of the licensee's SSNM holdings and material transactions, including discards, burials or other loss streams, as necessary to allow physical inventory requirements to be met;

(ii) Provide a capability for performing plant wide systems checks of the effectiveness of the material control and accounting system to accurately account for SSNM; and

(iii) Monitor and analyze material control and accounting data to identify discrepancies of possible safeguards significance.

(2) The licensee shall periodically perform a measured physical inventory, by element, of all SSNM in its possession. The minimum frequency of physical inventories must be set by the Commission on a case by case basis. Except for special physical inventories ordered by the Commission, the frequency of required physical inventories must be at intervals no longer than 12 months nor less than 2 months. The licensee shall assure that twice the standard deviation of the component of inventory difference due to measurements does not exceed the larger of a limit of 0.4 percent of plant throughput for the inventory period; or a limit of 200 grams of plutonium or U–233, or 300 grams of U–235; or exceed alternative limits authorized by the Commission on a case by case basis. Within 30 days after the start of each ending physical inventory, the licensee shall:

(i) Calculate, for the material balance interval terminated by that inventory, the inventory difference (ID) for the uranium and/or plutonium element(s), and its associated standard deviation;

(ii) Compare each ID calculated pursuant to paragraph (d)(2)(i) of this section with twice its associated standard deviation; and

(iii) Reconcile and adjust the book records to reflect the results of the physical inventory.

(3) The licensee shall establish, maintain, document, and follow procedures to:

(i) Assure accurate identification and measurement of the quantities of SSNM received and shipped by a licensee and the determination of the associated standard deviations;

(ii) Review, evaluate and resolve significant shipper-receiver differences on a shipment and on a cumulative basis for shipments of like material; and

(iii) Assure that twice the licensee's standard deviation for cumulative shipments or receipts on correspondent accounts, individually or collectively, for any period up to one year, does not exceed two formula kilograms of SSNM.

(4) The licensee shall establish, document, maintain, and follow a program for accountability control of scrap which assures that a licensee's recovered scrap is segregated from the scrap of other licensees or contractors and that:

(i) Any scrap measured with an uncertainty of greater than ±10 percent is recovered so that the results are segregated by inventory period and received by the end of the inventory period after the period in which the scrap was generated; or

(ii) The licensee demonstrates that the total scrap measurement uncertainty will not cause twice the standard deviation of inventory difference to exceed the larger of a limit of 0.4 percent of plant throughput for the inventory period; or a limit of 200 grams of plutonium or U–233, or 300 grams of U–235; or to exceed an alternative limit authorized by the Commission pursuant to § 70.87(d)(2).

(e) *Accounting investigation/resolution program.* Each licensee shall establish an accounting investigation/resolution program that ensures that the material control and accounting system is promptly modified where necessary so that its ability to demonstrate control of SSNM within satisfactory limits is maintained. This program must:

(1) Include plans to investigate inventory difference, shipper-receiver difference, and cumulative shipper-receiver difference that exceed twice their associated standard deviations and to promptly determine the cause. Differences not exceeding the following do not require investigation: for inventory differences, 50 grams; for individual shipper-receiver differences, 50 grams on whole shipments; and for cumulative shipper-receiver differences, 100 grams.

(2) In the event of an accounting irregularity, implement the plans devised under paragraph (e)(1) of this section;

(3) Assure that appropriate corrective action is taken to eliminate the causes of accounting irregularities; and

(4) Modify the plans under paragraph (e)(1) of this section to incorporate the results of investigations of accounting irregularities and other pertinent information as it becomes available.

§ 70.89[1] Protection against falsification of material control and accounting records or other compromise of the material control and accounting system by the design basis threat.

(a) To meet the general performance objective and requirements of 70.81, each subject licensee shall maintain a self-protecting material control and accounting syste.n which, in addition to

[1] This section is not part of Option 4.

satisfying the provisions of §§ 70.83 and 70.85, also contains sufficient redundancy and diversity to provide a high level of protection against significant reduction of the system's detection or response capabilities as a result of falsification or deceit by the design basis threat stated in § 70.81(a).

(b) To achieve this capability the licensee shall establish, maintain, and follow a material control and accounting program which:

(1) Establishes a system of independent checks and administrative controls that provides multiple constraints on the ability of the design basis threat to perform the following acts without detection within the time periods given below:

Act and Detection Time

Unauthorized or fraudulent transfers of materials between SSNM control teams involving 350 formula grams or more of SSNM—5 working days

Falsification or deceit resulting in the failure of a material control test to detect the loss of a control quantity of SSNM:

Type A material—5 working days

Type B material—15 working days

§ 70.91 Record keeping.

(a) Each licensee subject to § 70.81 shall establish, maintain and retain for the period specified records of the information and data that are used to satisfy the capabilities of, and document the actions taken in accordance with, §§ 70.83, 70.85, 70.87, and 70.89.* If a retention period is not otherwise specified by regulation or license condition, records must be maintained until the Commission authorizes their disposition. The following table gives specific record retention periods.

Table—Retention Periods for Specific MC&A Records

Description	Retention period
Records of material receipt and possession.	During possession and for five years after possession ends.
Process monitoring data used for detection and response.	One year.
Records of the training and qualification of personnel.	Two years.
Reports of the independent assessment, self-test, and accountability control program.	Five years.
Records of internal transfers of SSNM between stewardship teams.	Five years.

(b) An authorized representative of the Commission may copy, at a place other than the licensee's facility, and take away copies for Commission use, any record required to be kept by the regulations in this part or by a license condition.

Dated at Washington, D.C., this 4th day of September 1981.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

*Option 4 omits § 70.89.

46 FR 46333

Published 9/18/81

Comments must be received on or before 11/17/81. Comments received after that date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before that date.

Safeguards Requirements for Nonpower Reactor Facilities Authorized to Possess Formula Quantities of Strategic Special Nuclear Material

See Part 73 Proposed Rule Making

49 FR 4091

Published 2/2/84

Comment period expires 6/5/84. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before this date.

10 CFR Part 70

Material Control and Accounting Requirements; Facilities Possessing Formula Quantities of Strategic Special Nuclear Material

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission is proposing to amend the Material Control and Accounting (MC&A) regulations that apply to facilities authorized to possess and use formula quantities of strategic special nuclear material (SSNM). These amendments would apply to fuel cycle facilities, including reprocessing plants, but not to waste disposal operations or nuclear reactors. These amendments will significantly strengthen MC&A capabilities at the affected facilities by requiring more timely detection of possible SSNM losses and by providing for more rapid and conclusive resolution of discrepancies. The operational cost impact for these proposed requirements should be approximately the same as for current MC&A requirements. This is because the amendments relax or eliminate current requirements that are not cost-effective and take advantage of existing process control, production control, and quality control information.

DATES: Comments must be received on or before June 5, 1984. Comments received after June 5, 1984 will be considered if it is practical to do so, but assurance of consideration cannot be given except as to comments received on or before that date.

ADDRESSES: The Commission has prepared a draft Standard Format/Acceptance Criteria document as preliminary guidance to help explain the proposed rule, and a draft summary Regulatory Analysis which examines the incremental costs and benefits of the proposed rule. These two documents are available for examination and copying for a fee at the NRC Public Document Room at 1717 H Street NW., Washington, DC. Written comments or suggestions on the proposed rule, the

Standard Format/Acceptance Criteria document, or the Regulatory Analysis should be sent to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch. Comments may also be hand-delivered to Room 1121, 1717 H Street NW., Washington, DC, between 8:15 a.m. and 5:15 p.m. Comments received will be available for examination and copying for a fee at the NRC Public Document Room at 1717 H Street NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT:
Mr. C. W. Emeigh, Fuel Facility Safeguards Licensing Branch, Division of Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone 301–427–4040.

SUPPLEMENTARY INFORMATION:

Background

The focus of current domestic MC&A regulations for high enriched uranium and plutonium is on bimonthly inventories. Comparison of the inventory difference (ID) with percent of throughput does not occur until nearly 30 days after the beginning of the physical inventory. Thus, a thorough investigation of an anomaly might not start until nearly 90 days after its cause occurred. The usefulness of these bimonthly inventories in providing the public with assurance that significant quantities of SSNM have not been diverted has been limited by difficulty in conclusively resolving large inventory differences, necessitating reliance instead on plant security and material control records and intelligence information for the desired assurance. On August 20, 1981, the Commission approved the publication of an Advance Notice of Proposed Rulemaking (ANPRM) to solicit public comment on how to revise the MC&A regulations for SSNM capable of being made into fission explosives. The ANPRM was published in the **Federal Register** on September 10, 1981 (46 FR 45144), and included goals of the rulemaking and options for achieving the goals. The primary goals included (a) timely and localized detection of a possible loss, (b) rapid determination of whether an actual loss occurred, and (c) availability of information to aid in the recovery of lost material in the event of an actual loss.

Two of the options for achieving these goals retained the current emphasis on periodic physical inventories. The other three options introduced requirements for more timely use of process monitoring information for safeguards purposes and deemphasized the importance and frequency of physical inventories.

Proposed Action

The proposed rule contains much of the substance of Options 3 and 4 of the ANPRM, but it has been totally rewritten to remove unnecessarily prescriptive requirements, to reduce the number of plans and programs required, and to improve its clarity. Capabilities have been included to protect against insider adversaries. The proposed rule allows licensees to select the most cost-effective ways of achieving the desired performance. It also gives more credit for secure containment of SSNM and recognizes differences between processing SSNM in bulk form and machining encapsulated SSNM.

The proposed amendments would apply to all fuel cycle facilities authorized to possess and use formula quantities of strategic special nuclear material, including reprocessing plants but not waste disposal operations or nuclear reactors. For facilities authorized to possess and use less than a formula quantity of SSNM and for nuclear reactors and operations involved in waste disposal of sealed sources, the proposed amendments would retain, for the time being, the existing MC&A requirements in 10 CFR Part 70. A proposed rule to reform the MC&A requirements for low enriched uranium (LEU) facilities was previously published (47 FR 55951). It is envisioned that domestic MC&A requirements for all facilities eventually will be revised and codified under a new Part 74, much as Part 73 contains all physical security requirements. The Commission solicits comments on this approach.

The provisions of the rule and its associated guidance involve several significant departures from current regulations, including:

1. Providing more timely SSNM loss alarms through use of production and quality control data instead of less timely comparisons of plant-wide ID and its limit of error;

2. Increasing the ability to confidently resolve MC&A alarms by:

a. Decreasing the area and material quantity subject to an alarm,

b. Decreasing the number of persons who potentially could provide information about the cause of an alarm, and

c. Decreasing the length of time between a loss (or mistake) and its detection and resolution;

3. Basing detection criteria on quantities less than those necessary to construct a clandestine fission explosive rather than on throughput of SSNM at a facility;

4. Basing criteria for interruption of processing activities on an assessment of whether such interruption would facilitate the rapid resolution of a localized alarm involving a significant quantity of SSNM rather than on the inability to resolve an imbalance resulting from the taking of a periodic inventory;

5. Specifically requiring that the MC&A system design include protection against an insider threat;

6. Using the total variance of ID for ID analysis, not just the measurement errors; and

7. Phased reduction in the frequency of ID determinations, from bimonthly to as long as semiannually, during phased implementation of the revised MC&A system.

Relative to the rule provisions cited above, the Commission is especially soliciting public comment on the following points:

1. With respect to loss detection levels, should they be plant specific and to what extent would area loss detection levels greater than five formula kilograms facilitate area detection within material access areas (MAAs) rather than within subdivisions of MAAs?

2. On the subject of physical inventories, should the current practice of automatic plant shutdown when an inventory difference (ID) exceeds a specified threshold be continued and, if so, what should the threshold be?

3. To what extent would the combined effectiveness of (1) the in-process monitoring requirements in § 70.83, in particular the 60-day area detection capability in § 70.83(c)(4); and (2) the item monitoring requirements of § 70.85, suffice as a near real-time physical inventory? To facilitate a Commission determination as to whether both the near real-time physical inventory capabilities of §§ 70.73 and 70.85 and the semiannual inventory capabilities of § 70.89(e)(1) are required, the Commission also solicits comments on (1) the extent to which the semiannual physical inventory is a repetition of the near real-time inventory; (2) the extent to which the semiannual physical inventory provides an overcheck on the near real-time physical inventory, with significantly different characteristics which provide enhanced safeguards capabilities; and (3) what additional requirements, if any, should be placed on near real-time physical inventories if semiannual physical inventories are not to be required.

Response to Public Comments

In response to the ANPRM, 14 comments were received. Seven were from industry, five from private individuals and a public interest group, and two from the Department of Energy. Key issues were:

1. *Retention of the Status Quo.* Of the 14 comments received, six were in favor of maintaining the status quo. However, none of the commenters showed how this would meet the stated goals of the rulemaking. Because of poor loss localization, resolution of large IDs is too often inconclusive. Without adequate resolution, the ID cannot be used to determine whether or not a true loss occurred.

2. *Production Stoppage Under Process Monitoring Options.* Concerns were expressed that a high rate of false alarms leading to costly production stoppages would result from the process monitoring options published with the ANPRM. The proposed rule has been modified to mitigate that concern by:

a. Specifying that operations can be resumed upon completion of planned alarm resolution activities instead of requiring Commission authorization;

b. Excluding from shutdown those operations for which shutdown would not contribute positively to alarm resolution, such as operations where shutdown and restart would generate large quantities of poorly characterized scrap;

c. Providing a 24-hour time delay in which to correct mistakes before shutdown of continuous processes; and

d. Modifying the recurring loss detection requirement and exempting it from the shutdown provision.

3. *Measurement State of the Art.* Some commenters felt that the process monitoring options would require nondestructive assay (NDA) techniques that are beyond the current state of the art. This contention fails to recognize that most of the loss detection required by the proposed rule can be accomplished by weight and volume measurements. Further, independent experts have reported that supplemental assays which may be required can be completed without the use of NDA equipment in less than 24 hours, well within the minimum detection time of three days. In some cases off-the-shelf NDA equipment would be sufficient to meet some of these supplemental data needs. In any event, the proposed rule provides sufficient licensee flexibility to achieve required performance, without improving measurement systems, through better and more careful material handling practices; reduction in the frequency of process upsets, spills, and leaks; fewer transcription or arithmetic errors; and reduction of the span of a material control test.

4. *Phase-In Period.* Some commenters have raised the point that the process monitoring concept is new and to some extent untried, and that it should be demonstrated before being imposed through regulations. Despite the fact that process monitoring is to some extent already being demonstrated in DOE and in some NRC-licensed facilities, the Commission agrees that some of the specific performance requirements have not been tried in all situations. The Commission also agrees that experience with some of these requirements will enhance the overall likelihood of a smooth and successful implementation of the new requirements. For these reasons the proposed rule incorporates an extended phase-in period.

5. *Backfitting.* Option 5 of the ANPRM would have limited the application of MC&A reforms to new facilities and major modifications to existing facilities. Five commenters specifically opposed this option, while three recommended its adoption. Studies performed for the NRC conclude that implementation of the proposed rule at existing licensed facilities is feasible and that the cost impact of implementation could be offset by cost savings in operation. Given this information, the Commission sees no valid reason why the rule should not be applied uniformly to both existing and new fuel manufacturing and reprocessing facilities.

6. *Collusion Protection.* Comment was divided between those favoring the option in which MC&A data would be required to be protected against falsification by a conspiracy threat and the option in which the threat was limited to a single insider. The requirements of the proposed rule reflect a compromise position which has been designed to function in an integrated fashion with Physical Protection and which should result in improved cost effectiveness compared to Options 3 and 4 of the ANPRM. Protection of MC&A data is only required against falsification by a single insider, providing that the insider does not have authority within the Physical Protection system. If an MC&A individual does have dual authority within both systems, then the MC&A data is required to be protected against collusion of that individual with any other individual with MC&A responsibilities. This approach assures that the MC&A system provides additional capability for deterring and detecting collusion, over and above that provided by 10 CFR Part 73, without doubling the size of the design basis threat for the integrated safeguards system.

7. *Reprocessing.* As currently written, the proposed rule would apply to fuel reprocessing facilities. Although the scope of the ANPRM excluded such facilities, comments were invited on the possible applicability of the proposed rulemaking to these plants. The two industry commenters who responded to this invitation were favorably inclined toward the general approach of the process monitoring options. No other comments were received on this topic.

Since the ANPRM, several significant changes have been made in the proposed rule. In view of this fact, the Commission is again soliciting comments on whether or not this rule should apply to reprocessing plants.

International Considerations

It should be noted that the goals stated previously are domestic goals and are considered to be appropriate for a subnational level threat. For all U.S. licensees, the detection and response capabilities of the proposed rule have been determined to be sufficient to adequately protect the public health and safety for a subnational threat. On the other hand, the International Atomic Energy Agency (IAEA), which is responsible for applying international safeguards, must judge whether a significant diversion has occurred in the face of a possible national level conspiracy. In order to reach its conclusion with the required level of certainty, the IAEA may find it necessary to receive plant-wide physical inventory data more frequently than semiannually. Other elements of these proposed regulations may similarly need to differ depending on whether or not national as well as subnational diversion threats need to be considered. The NRC is coordinating with the Department of State regarding these issues and their proper reflection in domestic U.S. regulations.

Paperwork Reduction Act Statement

The reporting and recordkeeping requirements contained in the proposed amendments have been evaluated and a clearance package has been submitted to the Office of Management and Budget as required by Pub. L. 96–511. Four high enriched fuel cycle facilities will be affected and possibly one fuel reprocessing facility in the future.

Also, these amendments will not result in an increase in total requirements for the affected licensees due to the trade-off that will occur between the new prompt accountability

requirements and the relaxed physical inventory requirements.

Regulatory Analysis

Results of analyses performed by staff and by contractors in support of the proposed MC&A Reform Amendments indicate that significant benefits would accrue from implementation of these amendments at a relatively moderate increase in cost the first year followed by significant savings in subsequent years.

The Commission has prepared a draft summary Regulatory Analysis on this proposed regulation that compares the costs and benefits of the proposed rule to the status quo. The draft analysis is available for examination and copying for a fee in the NRC Public Document Room, 1717 H Street NW., Washington, DC 20555.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)), the Commission hereby certifies that this rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. This proposed rule would affect four fuel cycle facilities that use SSNM. The companies that own these four facilities, United Nuclear Corporation, Nuclear Fuel Services, Babcock and Wilcox, and GA Technologies, do not fall within the definition of "small entities" set forth in the Regulatory Flexibility Act or by the Small Business Administration in 13 CFR Part 121.

List of Subjects in 10 CFR Part 70

Hazardous materials-transportation, Nuclear materials, Packaging and containers, Penalty, Radiation protection, Reporting and recordkeeping requirements, Scientific equipment, Security measures, Special nuclear material.

PART 70—DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 553, notice is hereby given that the NRC is proposing to adopt the following amendments to 10 CFR Part 70.

1. The authority citation for Part 70 is revised to read as follows:

Authority: Secs. 51, 53, 161, 182, 183, 68 Stat. 929, 930, 948, 953, 954, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2071, 2073, 2201, 2232, 2233, 2282); secs. 201, as amended, 202, 204, 206, 88 Stat. 1242, as amended, 1244, 1245, 1246 (42 U.S.C. 5841, 5842, 5845, 5846).

Section 70.7 also issued under Pub. L. 95-601, sec 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 70.21(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 70.31 also issued under sec. 57d, Pub. L. 93-377, 88 Stat. 475 (42 U.S.C. 2077). Sections 70.36 and 70.44 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 70. 61 also issued under secs. 186, 187, 68 Stat. 955 (42 U.S.C. 2236, 2237). Section 70.62 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); §§ 70.3, 70.19(c), 70.21(c), 70.22(a), (b), (d)-(k), 70.24(a) and (b), 70.32(a)(3), (5), (6), (d), and (i), 70.36, 70.39(b) and (c), 70.71(a), 70.42(a), and (c), 70.56, 70.57(b), (c), and (d), 70.58(a)-(g)(3), and (h)-(j) are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §§ 70.7, 70.20a(a), and (d), 70.20b, (c), and (e), 70.21(c), 70.24(b), 70.32(a)(6), (c), (d), (e), and (g), 70.33, 70.51(c)-(g), 70.56, 70.57(b) and (d), 70.58(a)-(g)(3) and (h)-(j) are issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§ 70.20b(d) and (e), 70.51(b) and (i), 70.52, 70.53, 70.54, 70.55, 70.58(g)(4), (k), and (l), 70.59, and 70.60(b) and (c) are issued under Sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o))

2. In § 70.4, paragraphs (w) through (oo) are added to read as follows:

§ 70.4 Definitions.

* * * * *

(w) "MC&A Alarm" means a situation in which there is: (1) An out-of-location or compromised item; (2) an indication of a flow of SSNM where there should be none; or (3) a difference beween a measured or observed amount or property of material and its corresponding predicted or property value that exceeds a threshold established to provide the detection performance required by § 70.83.

(x) "Power of detection" means the probability that the critical value or threshold of a statistical test will be exceeded when there is an actual loss of material.

(y) "Abrupt" means the time interval between sequential performances of a material control test that covers the material in question or a 4-hour interval, whichever is longer.

(z) "Recurring" means a time interval greater than abrupt.

(aa) "Strategic Special Nuclear Material" (SSNM) has the same meaning as in § 73.2(aa).

(bb) "Formula Kilogram" means SSNM in any combination in a quantity of 1,000 grams computed by the formula, grams = (grams contained U-235) + 2.5 (grams U-233 + grams plutonium).

(cc) "Category IA material" means SSNM directly useable in the manufacture of a nuclear explosive device, except if:

(1) Its dimensions are large enough (at least 2 meters in length) to preclude hiding the item on an individual;

(2) The weight of 5 formula kilograms of the material is so large (at least 50 kg) that one person cannot carry it inconspicuously; or

(3) The quantity of SSNM in the item is so small (less than 0.05 formula kilograms) that a large number of diversions are needed to accumulate 5 formula kilograms;

(dd) "Category IB materials" means all SSNM material other than Category IA.

(ee) "Unit process" means an identifiable segment or segments of processing activities for which the amounts of primary input and output SSNM flows are based on measurements.

(ff) "Administratively controlled areas" means portions of the plant arrived at by subdividing the plant into groups of unit processes.

(gg) "Accessible location" means a process location at which SSNM could be acquired without the need for visible puncturing, breaking, or otherwise violating the integrity of the process equipment containing the SSNM.

(hh) "Controlled access area" has the same meaning as in § 73.2(z).

(ii) "Material access area (MAA)" has the same meaning as in § 73.2(j).

(jj) "Vault" has the same meaning as in § 73.2(n).

(kk) "Inventory Difference" (ID) means the sum of the ending inventory and removals from inventory subtracted from the sum of the beginning inventory and additions to inventory.

(ll) "Estimator" means a mathematical expression that is used as the tool to estimate an unknown true value.

(mm) "Estimate" means a specific numerical value arrived at by application of an estimator.

(nn) "Active inventory" means the sum of additions to inventory, beginning inventory, ending inventory, and removals from inventory, after all common terms have been excluded. Common terms are any material values that appear to the active inventory calculation more than once and come from the same measurement.

(oo) "Continuous process" means a unit process in which feed material must be continually entered into the process in order to maintain the equilibrium conditions required by the process.

3. In § 70.22, paragraph (b) is revised to read as follows:

§ 70.22 Contents of application.

* * * * * *

(b) Each application for a license to possess at any one time and location special nuclear material in a quantity exceeding one effective kilogram of special nuclear material and to use such special nuclear material except those uses involved in the operation of a nuclear reactor licensed pursuant to Part 50 of this chapter or those involved in a waste disposal operation, or as sealed sources, shall contain a full description of the applicant's program for control of and accounting for special nuclear material which will be in the applicant's possession under license, to show how compliance with the requirements of § 70.58 or § 70.81, as applicable, will be accomplished.

* * * * *

4. In § 70.32, the introductory text of paragraph (c) is revised to read as follows:

§ 70.32 Conditions of licenses.

* * * * *

(c) Each license authorizing the possession at any one time and location of special nuclear material in a quantity exceeding one effective kilogram of special nuclear material and the use of such special nuclear material except those uses involved in the operations of a nuclear reactor licensed pursuant to Part 50 of this chapter and those involved in a waste disposal operation and in sealed sources, shall contain and be subject to a condition requiring the licensee to maintain and follow (1) the program for control and accounting for special nuclear material and fundamental material controls described pursuant to §§ 70.22(b), 70.58(1), or 70.81(c), as appropriate, (2) the measurement control program for special nuclear materials control and accounting described pursuant to § 70.57, if appropriate, and (3) such other material control procedures as the Commission determines to be essential for the safeguarding of special nuclear material and providing that the licensee shall make no change which would decrease the effectiveness of the material control and accounting program prepared pursuant to §§ 70.22(b), 70.58(l), 70.51(g) or 70.81(c), as appropriate, and the measurement control program prepared pursuant to § 70.57, if appropriate, without the prior approval of the Commission. A licensee desiring to make such changes shall submit an application for amendment to its license pursuant to § 70.34. The licensee shall maintain records of changes to the material control and accounting program made without prior Commission approval, for a period of three years from the date of the change, and shall furnish to the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, with a copy to the appropriate NRC Regional Office shown in Appendix A of Part 73 of this chapter, a report containing a description of each change within:

* * * * *

5. In § 70.51, paragraph (d) and the introductory text of paragraph (e) are revised to read as follows:

§ 70.51 Material balance, inventory, and records requirements.

* * * * *

(d) Except as required by paragraph (e) of this section or by § 70.89(e), each licensee who is authorized to possess at any one time and location special nuclear material in a quantity totaling more than 350 grams of contained uranium-235, uranium-233, or plutonium, or any combination thereof, shall conduct a physical inventory of all special nuclear material in its possession under license at intervals not to exceed twelve months.

(e) Each licensee who is authorized to possess at any one time special nuclear material in a quantity exceeding one effective kilogram of special nuclear material, but less than five formula kilograms, and to use such special nuclear material for activities other than those involved in the operation of a nuclear reactor licensed pursuant to Part 50 of this chapter or those involved in a waste disposal operation; or as sealed sources, or as reactor irradiated fuels involved in research, development, or evaluation programs in facilities other than irradiated fuel reprocessing plants, shall:

* * * * *

6. In § 70.57, the introductory text of paragraph (b) is revised to read as follows:

§ 70.57 Measurement control program for special nuclear material control and accounting.

* * * * *

(b) In accordance with § 70.58(f), each licensee who is authorized to possess at any one time and location special nuclear material in a quantity exceeding one effective kilogram of special nuclear material, but less than five formula kilograms, and to use such special nuclear material for activities other than those involved in the operation of a nuclear reactor licensed pursuant to Part 50 of this chapter, those involved in a waste disposal operation, or as sealed sources, shall establish and maintain a measurement control program for special nuclear material control and accounting measurements. Each program function shall be identified and assigned in the licensee organization in accordance with § 70.58(b)(2) and functional and organizational relationships shall be set forth in writing in accordance with § 70.58(b)(3). The program shall be described in a manual which shall contain the procedures, instructions, and forms prepared to meet the requirements of this paragraph, including procedures for the preparation, review, approval, and prompt dissemination of any program modification of changes. The licensee's program shall include the following:

* * * * *

7. In § 70.58, paragraph (a) is revised to read as follows:

§ 70.58 Fundamental nuclear material controls.[1]

(a) Each licensee who is authorized to possess at any one time and location special nuclear material in a quantity exceeding one effective kilogram of special nuclear material, but less than five formula kilograms, and to use such special nuclear material except those uses involved in the operation of a nuclear reactor licensed pursuant to Part 50 of this chapter or those involved in a waste disposal operation, or as sealed sources, shall establish, maintain, and follow written material control and accounting procedures in compliance with the fundamental nuclear material controls requirements specified in paragraphs (b) through (k) of this section and such other controls as the Commission determines to be essential for the control of and accounting for special nuclear material.

8. Sections 70.81, 70.83, 70.85, 70.87, and 70.89 are added to read as follows:

§ 70.81 Nuclear material control and accounting for strategic special nuclear material: general performance requirements.

(a) General performance objectives. Each licensee who is authorized to possess five or more formula kilograms of strategic special nuclear material (SSNM) and to use such material at any site, other than a nuclear reactor licensed pursuant to Part 50 of this chapter, or in operations involved in waste disposal shall establish, implement, and maintain a Commission approved material control and accounting (MC&A) system that will achieve the following objectives:

(1) Timely detection of the possible loss of five or more formula kilograms of strategic special nuclear material;

(2) Rapid determination of whether an actual loss of five or more formula kilograms occurred; and

(3) Generation of information to aid in the recovery of lost material in the event of an actual loss.

(b) System capabilities. To achieve the general performance objectives specified in § 70.81(a), the MC&A system must provide the capabilities described in §§ 70.83, 70.85, 70.87, and 70.89, and must incorporate checks and balances that are sufficient to detect falsification of data and reports that could conceal diversion by:

(1) An individual, including an employee (in any position); or

(2) Collusion between an individual who has responsibility or control within both the physical protection and the MC&A systems and another individual with MC&A responsibilities.

(c) Implementation dates. Each licensee subject to the requirements of paragraph (a) of this section:

(1) No later than 150 days after the effective date of these amendments, shall submit a fundamental nuclear material control plan describing how the licensee will comply with the requirements of paragraph (b) of this section; and

(2) Within 360 days of the effective date of these amendments or 90 days after the plan submitted pursuant to paragraph (c)(1) of this section is approved, whichever is later, shall implement the approved plan.

(3) Notwithstanding paragraphs (c)(1) and (c)(2) of this section, a licensee may delay for an additional 18 months implementation of portions of its plans and procedures involving shutdown of a process for resolution of an MC&A alarm. However, during this delay a licensee shall conduct physical inventories at the intervals specified in § 70.51(e)(3).

(4) Notwithstanding § 70.89(e)(1), shall conduct physical inventories at the intervals specified in § 70.51(e)(3) until after the licensee has satisfactorily demonstrated, for a period of 6 months, adequate performance of all commitments in its plan and has received Commission approval.

§ 70.83 In-process monitoring.

(a) Licensees subject to § 70.81 shall monitor internal transfers, storage, and processing of SSNM. This in-process monitoring must achieve the detection capabilities described in paragraphs (b) and (c) of this section for all SSNM except:

(1) SSNM that qualifies to come under the item loss detection requirements of § 70.85;

(2) Scrap or waste in the form of small pieces, cuttings, chips, solutions or in other forms that result from a manufacturing process, contained in 30 gallon or larger containers, with an SSNM content of less than 0.25 grams per liter; and

(3) SSNM which is not readily separable from other radioactive material and which has a total external radiation dose rate in excess of 100 rem per hour at a distance of three feet from any accessible surface without intervening shielding.

(b) *Unit Process Detection Capability.* (1) The licensee shall detect any abrupt loss of SSNM from any unit process using any statistical test that has 99 percent power of detecting the loss of five formula kilograms. The detection shall occur within:

(i) Three working days of a loss of Category IA material from any accessible location; and

(ii) Seven calendar days of a loss of Category IB material from any accessible location.

(2) For each unit process, at least every seven calendar days the licensee shall evaluate measurement data accumulated since the last cleanout of the unit process. This evaluation must be able to detect a recurring loss with 90 percent power of detection. The amount to be detected for each unit process must be as low as reasonably achievable, but need not be less than 50 grams of SSNM.

(c) *Area Detection Capability.* The licensee shall: (1) Detect any abrupt loss of SSNM accumulated from the unit processes within the plant or within any administratively controlled area, using a statistical method that has 90 percent power of detecting the loss of five formula kilograms;

(2) If detection within administratively controlled areas is elected, provide administrative or physical measures to protect against diversion of five formula kilograms from being accumulated from two or more administratively controlled areas;

(3) If the statistical method used for paragraph (c)(1) of this section involves a test in addition to the tests required by paragraph (b) of this section, perform that test at least every seven calendar days; and,

(4) For the entire plant or for each administratively controlled area, at least every seven calendar days evaluate measurement data accumulated over the most recent 60 days of operation. This evaluation must be able to detect a recurring loss with 90 percent power of detection. The amount to be detected must be as a low as reasonably achievable, but need not be less than 50 grams of SSNM.

§ 70.85 Item monitoring.

(a) Licensees subject to § 70.81 shall provide the detection capability described in paragraph (b) of this section for any uniquely identified items of SSNM that have been quantitatively measured and the validity of that measurement independently confirmed, and that additionally have been either:

(1) Tamper-safed or placed in a vault that provides protection at least equivalent to tamper-safing; or

(2) Constructed such that removal of SSNM would be readily and permanently apparent (e.g., encapsulated).

(b) The licensee shall verify the presence and integrity of selected SSNM items. The item selection method must be statistically sound and have at least a 99 percent power of detecting the loss of items that total five formula kilograms plant-wide within:

(1) For items in a vault or in a permanently controlled access area isolated from the rest of the material access area (MAA), one month from loss of Category IA items and two months from loss for Category IB items;

(2) For items elsewhere in the MAA, three working days from loss for Category IA items and seven calendar days from loss for Category IB items.

§ 70.87 Alarm resolution.

(a) Licensees subject to § 70.81 shall provide the MC&A alarm resolution capabilities described in paragraphs (b) through (g) of this section.

(b) The licensees shall promptly resolve the nature and cause of any MC&A alarm.

(c) Each licensee shall notify immediately, by telephone, the appropriate NRC Regional Office listed in Appendix A of Part 73 of this chapter of any MC&A alarm that remains unresolved beyond the time period specified for its resolution in the licensee's fundamental nuclear material control plan. The licensee may consider an alarm to be resolved if, based on additional information:

(1) Clerical or computational error is found that clearly was the cause of the alarm; or

(2) There is relevant evidence that substantiates the cause of the alarm or that substantiates that no loss has occurred.

(d) If a loss has occurred, the licensee shall determine the amount of SSNM lost.

(e) The licensee shall take corrective action to:

(1) Return out-of-place SSNM, if possible, to an appropriate place;

(2) Update and correct appropriate records; and

(3) Modify the MC&A system, if appropriate, to prevent similar occurrences in the future.

(f) The licensee shall provide an ability to respond rapidly to alleged thefts.

(g) In the event that an abrupt loss detection estimate exceeds five formula kilograms of SSNM:

(1) Material processing operations related to the alarm must be suspended until completion of planned alarm resolution activities, unless the suspension of operations will negatively affect the ability to resolve the alarm. However, operations of continuous processes may continue for a 24-hour period during which checks are made for mistakes.

(2) The licensee shall notify within 24 hours, by telephone, the appropriate NRC Regional Office that an MC&A alarm resolution procedure has been initiated.

§ 70.89 Quality assurance and accounting requirements.

(a) Licensees subject to § 70.81 shall provide the quality assurance and accounting capabilities described in paragraphs (b) through (g) of this section.

(b) *Management Structure.* The licensee shall establish and maintain a management structure that includes clear overall responsibility for MC&A functions, independence from production responsibilities, and adequate review and use of those MC&A procedures identified in the approved plan as being critical to the effectiveness of the described system.

(c) *Personnel Qualification and Training.* The licensee shall assure that key personnel, who work in positions involving tasks where mistakes could directly degrade the safeguards capabilities of the MC&A system, are trained to maintain a high level of safeguards awareness and are qualified to perform their jobs.

(d) *Quality Control.* The licensee shall: (1) Assure that the quality of SSNM measurment systems and material processing is continually controlled to a level of effectiveness sufficient to satisfy the capabilities required for detection, response, and accounting.

(2) Incorporate checks and balances in the MC&A system sufficient to control the rate of human errors in material control and accounting information to as low as reasonably achievable.

(3) Assure that SSNM measurements used in satisfying § 70.89(e) are so controlled that:

(i) The total contribution of measurement systems' uncertainties to the standard deviation of the inventory difference estimator is less than 0.1 percent of active inventory for SSNM processing facilities or 0.2 percent of active inventory for reprocessing facilities;

(ii) Bias corrections for measurement systems are applied if their bias estimates exceed the larger of twice the standard deviations of their estimators or 50 grams of SSNM;

(iii) The impacts of any uncorrected biases are accounted for in the inventory differences; and

(iv) If, for like material, shipper-receiver differences accumulated over an inventory period exceed the larger of one formula kilogram or 0.1 percent of the total amount shipped, then the licensee shall investigate and take corrective action, as appropriate, to identify and reduce measurement biases.

(e) *Accounting.* The licensee shall: (1) Except as required by Part 75 of this chapter, perform a physical inventory at least every six months and, within 60 days of the start of the inventory, reconcile and adjust the book inventory to the physical inventory.

(2) Resolve, or report an inability to resolve, any inventory difference estimate greater than 200 grams of plutonium or U–233 or 300 grams of U–235, that exceeds:

(i) Twice the standard deviation of the inventory difference estimator; or,

(ii) One-half percent of the active inventory.

(3) Resolve on an individual container or lot basis, as appropriate, and when required by Part 75 of this chapter on a batch basis, any shipper-receiver difference that exceeds both:

(i) Twice the standard deviation of the difference; and

(ii) The larger of 0.5 percent of the amount of SSNM in the container or lot, as appropriate, or 50 grams of SSNM.

(4) In addition to any measurements and/or recovery of scrap used in meeting detection and response requirements:

(i) Assure that recovered scrap is segregated from the scrap of other licensees or contractors and that any scrap measured with a standard deviation greater than 5% of the measured amount is recovered so that the results are segregated by inventory period and received within six months of the end of the inventory period in which the scrap was generated; or

(ii) Demonstrate that the total scrap measurement uncertainty will not cause noncompliance with § 70.89(d)(3).

(5) Keep accounts of all additions to and removals from process based on measurements for plutonium element and for uranium element and isotopes.

(f) *Independent Assessment.* The licensee shall: (1) At least every 12 months, independently assess the past performance of the MC&A system and review its effectiveness; and

(2) Document management's action on prior assessment recommendations.

(g) *Recordkeeping.* The licensee shall establish auditable records sufficient to demonstrate that the requirements of §§ 70.83, 70.85, 70.87, and 70.89 have been met and maintain those records for at least three years unless a longer retention time is required by Part 75 of this chapter.

Dated at Washington, DC, this 27th day of January 1984.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

50 FR 5600
Published 2/11/85
Comment period expires 5/13/85

Decommissioning Criteria for Nuclear Facilities

See Part 30 Proposed Rule Making

50 FR 13797
Published 4/8/85
Comment period expires 7/8/85

Licenses and Radiation Safety Requirements for Well-L[illegible]ging Operations

See Part 39 Proposed Rule Making

50 FR 19695
Published 5/10/85
Comment period expires 7/9/85

Material Balance Reports

See Part 40 Proposed Rule Making

50 FR 23025
Published 5/30/85
Extended comment period expires 7/12/85.

Decommissioning Criteria for Nuclear Facilities; Extension of Comment Period

See Part 30 Proposed Rule Making

50 FR 23960
Published 6/7/85
Comment period expires 10/7/85.

Financial Responsibility Requirements Applicable to NRC Licensees for Cleanup of Accidental and Unexpected Releases of Radioactive Materials

See Part 30 Proposed Rulemaking

PART 70

DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

PETITIONS FOR RULE MAKING

42 FR 41675
Published 8/18/77
Comment Period expires 10/17/77

[Docket No. PRM-70-6]

EBERLINE INSTRUMENT CORP.

Filing of Petition for Rule Making

Notice is hereby given that the Eberline Instrument Corporation, P.O. Box 2108, Santa Fe, New Mexico, by letter dated July 18, 1977, has filed with the Nuclear Regulatory Commission a petition for rule making.

The petitioner requests that the Nuclear Regulatory Commission approve of the air transport of calibration or reference sources which are generally licensed pursuant to 10 CFR 70.19 and manufactured pursuant to a specific license issued by the Commission under 10 CFR 70.39, or in accordance with the specifications contained in a specific license issued to the manufacturer by an Agreement State which authorizes manufacture of the sources for distribution to persons generally licensed by the Agreement State.

The petitioner states that:

These calibration or reference sources are limited by 70.19 to not more than 5 uCi of plutonium (0.00008 g). They can only be distributed by a manufacturer or importer who is specifically licensed under 70.39 of 10 CFR 70. Prior to issuance of such a license, the NRC requires the applicant to perform tests to demonstrate that the sources are safe for general license distribution. They are completely safe and can not be rendered unsafe by any possible accident condition. To obtain a license, each manufacturer must describe the storage container. Recognizing that the material involved is a diminutive quantity in terms of safeguard accountability and that safety is assured by the testing performed under 70.19, we believe that NRC can grant our petition to declare that the storage container is a suitable shipping container for air shipments of these calibration or reference sources.

Alternatively, the petitioner requests the Commission to declare that these calibration and reference sources represent "de minimis" quantities of plutonium for which container certification should not be required. Paragraph (a)(3) of § 70.39 provides that each source will contain no more than 5 microcuries of plutonium.

A copy of the petition for rule making is available for public inspection at the Commission's Public Document Room, 1717 H Street NW., Washington, D.C. A copy of the petition may be obtained by writing to the Division of Rules and Records, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

All persons who desire to submit written comments or suggestions concerning the petition for rule making should send their comments to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Docketing and Service Branch by October 17, 1977.

≫ 48 FR 43051

Published 9/21/83

National Bureau of Standards, Department of Commerce; Withdrawal of a Petition for Rulemaking

See Part 20 Petitions for Rulemaking

PART 70 DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

STATEMENTS OF CONSIDERATION

21 FR 764
Published 2/3/56
Effective 3/4/56

Effective 30 days after publication in the FEDERAL REGISTER, Part 70, Title 10, Chapter I, Code of Federal Regulations, entitled "Definition of Fissionable Material," is hereby amended to read as follows:

25 FR 12730
Published 12/13/60
Effective 1/12/61

The following amendment prescribes a standard transfer and receipting form to be used by persons holding licenses issued pursuant to the regulations in Part 70, Chapter 1, Title 10, Code of Federal Regulations, in initiating and receipting shipments of special nuclear material.

Notice of proposed issuance of the amendment was published in the FEDERAL REGISTER on August 17, 1960 (25 F.R. 7890), and a period of 60 days was allowed for receipt of comments by interested persons. The comments filed have been given careful consideration.

The provisions of the new § 70.54 are unchanged from those which appeared in the notice of proposed rule making. However, slight changes have been made in the Form AEC–388, and in the accompanying instructions, as follows:

1. On the face of the Form AEC–388 the parenthetical instruction "(For AEC Use Only)" has been deleted from Item 5.

2. On the Face of Form AEC–388 Item 11 has been changed to read: "The items and quantities listed above were shipped on * * *".

3. On the face of Form AEC–388 Item 12 has been changed to read: "The items and quantities listed above were received on * * *".

4. In the instructions appearing on the reverse side of Form AEC-388 the "Note" at the bottom of the page is designated "Note No. 1", and a "Note No. 2" is added, reading: "Licensees are not required to report transfers of special nuclear material to another licensee or to the Commission, for disposal, if the material is contained in waste and if the material has been declared to the Commission as 'consumed' by a licensee. Licensees are required to report all other transfers of special nuclear material, even though the Commission may have been paid the full value therefor. In such cases the following statement should be inserted in Item 8: 'Full value paid to AEC'."

5. Instruction 5 has been changed to read: "Enter name, address, license number and lease number of the organization assuming lease responsibility for the material; also the applicable order (Form AEC–640) number, if available."

Copies of Form AEC–388 referred to in the amendment will be furnished upon request made to AEC Material Leasing Officer, U.S. Atomic Energy Commission, Oak Ridge, Tennessee.

Notice is hereby given that the following amendment to 10 CFR Part 70 is published as a document subject to codification and is effective 30 days after publication in the FEDERAL REGISTER:

29 FR 5883
Published 5/5/64
Effective 6/4/64

On September 20, 1963, the Commission published in the FEDERAL REGISTER (28 F.R. 10302) for public comment proposed amendments to 10 CFR Part 70 to (1) issue a general license authorizing the receipt, possession, use and transfer of plutonium in calibration or reference sources, and (2) specify requirements for a specific license for persons who manufacture such sources for distribution to persons generally licensed. This action was taken in response to a petition for rule making (PRM–70–1) submitted to the Commission by Eberline Instrument Corporation.

The general license in § 70.19 below would be issued only to the following persons:

(1) Any person in a non-agreement State (any State with which the Commission has not entered into an effective agreement under subsection 274b. of the Act) who holds a specific license issued by the Commission which authorizes him to receive, possess, use and transfer byproduct material, source material, or special nuclear material;

(2) Any Government agency, as defined in § 70.4(f), which holds a specific license issued by the Commission which authorizes it to receive, possess, use and transfer byproduct material, source material, or special nuclear material; and

(3) Any person in an agreement State (any State with which the Commission has entered into an effective agreement under subsection 274b. of the Act) who holds a specific license issued by the Commission which authorizes him to receive, possess, use and transfer special nuclear material.

In § 70.39 below the requirements for a specific license would be established for persons who manufacture sources for distribution to persons generally licensed under § 70.19.

The amendments published below retain the substantive provisions set forth in the proposed rule although a number of minor revisions have been made for purposes of clarification. These revisions reflect Commission consideration of the comments and suggestions received in response to the notice of proposed rule making. One of the revisions is a modification of the wording on the label required to be affixed to the source or source container to make the label appropriate for use in both agreement States and non-agreement States. The change in wording on the label should simplify labeling requirements for manufacturers who distribute sources.

Pursuant to the Atomic Energy Act of 1954, as amended, and the Administrative Procedure Act of 1946, the following amendment of Title 10, Chapter I, Part 70, "Special Nuclear Material", is published as a document subject to codification to be effective thirty (30) days after publication in the FEDERAL REGISTER.

29 FR 14401
Published 10/21/64
Effective 1/18/65

See Part 40 Statements of Consideration.

31 FR 4668
Published 3/19/66
Effective 3/19/66

Miscellaneous Amendments

See Part 20 Statements of Consideration.

32 FR 2364
Published 2/3/67
Effective 3/5/67

Requirements for Control and Physical Inventory

On May 27, 1966, the Atomic Energy Commission published in the FEDERAL REGISTER (31 F.R. 7634) proposed amendments to its regulation, 10 CFR Part 70, Special Nuclear Material, which would require holders of licenses for special nuclear material to adopt material control systems to better enable them to account for the special nuclear material which they are licensed to possess and to perform physical inventories of such material.

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments within 60 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. Upon consideration of the material submitted in response to the notice of proposed rule making, the views of industry representatives offered during an industry advisory conference convened by the Atomic Energy Commission on July 27, 1966, to discuss the proposed amendments, and other factors involved, the Commission has adopted the amendments set forth below.

The principal differences from the amendments published for comment are:

1. Proposed § 70.22(b) has been revised to require applicants for special nuclear material licenses to possess and use more than 5,000 grams of special nuclear material for activities other than those involved in the operation of a nuclear reactor or as a sealed source to submit to the Commission (1) a full description of their procedures for the control of and accounting for special nuclear material, including certain specified procedures, and (2) an identification of the fundamental material controls provided in the applicant's material control and accounting procedures, which the applicant considers essential for assuring that special nuclear material in his possession will be adequately safeguarded;

2. Proposed § 70.22(b) has been revised to provide that the fundamental material controls identified by the applicant will be considered by the Commission in determining the conditions to be incorporated in the license pursuant to § 70.32(c);

3. Footnotes have been added to §§ 70.22(b)(1) and 70.51(c)(1) to note that as guidance in preparing the required descriptions, an applicant or a licensee may consult "A Guide for the Preparation of Procedure Manuals for Safeguards Control and Inventory Management of Nuclear Materials," which is available upon request to the AEC. In this regard it is noted that the AEC views as high priority the development of more definitive criteria and standards in the safeguarding of special nuclear material and as these are developed they will be included in appropriate AEC regulations or guides;

4. A new § 70.32(c) has been added which provides that each license to possess and use more than 5,000 grams of special nuclear material for activities other than those involved in the operation of a nuclear reactor or as a sealed source shall contain a condition requiring the licensee to maintain such fundamental material controls as were identified pursuant to §§ 70.22(b)(2) and 70.51(c)(2) and such other material control procedures, as the Commission determines to be essential for the safeguarding of special nuclear material;

5. The new requirements relating to the establishment and maintenance of material control and accounting procedures and the performance of physical inventories by special nuclear material licensees, have been included in § 70.51 as paragraphs (b) and (c) rather than in a new § 70.24 as proposed;

6. The present § 70.51 has been redesignated § 70.51(a) and revised to require licensees to keep records of all special nuclear material in their possession regardless of origin or method of acquisition;

7. Redesignated § 70.51 (b) and (c) have been revised to make clear that the new requirements apply only to licensees authorized to possess and use special nuclear material in a quantity exceeding 5,000 grams of "contained" uranium 235, uranium 233, and plutonium or any combination thereof;

8. Redesignated § 70.51(b)(2) has been revised to make clear that the requirement for an annual physical inventory of material is a minimum requirement and that the Commission may require inventories at more frequent intervals in individual cases if this appears to be necessary;

9. A footnote has been added to redesignated § 70.51(b)(2) to explain that the required physical inventory of the special nuclear material content of irradiated fuel elements may be performed by calculations, using measured indirect parameters such as reactor power output;

10. Redesignated § 70.51(c) has been revised to require licensees authorized to possess and use more than 5,000 grams of special nuclear material for activities other than those involved in the operation of a nuclear reactor or as a sealed source to submit to the Commission (1) a full description of their procedures for the control of and accounting for special nuclear material, including certain specified procedures, and (2) an identification of the fundamental material controls provided in the licensee's material control and accounting procedures, which the licensee considers essential for assuring that special nuclear material in his possession will be adequately safeguarded;

11. Redesignated § 70.51(c) has been revised to provide that the fundamental material controls identified by the licensee will be considered by the Commission in determining the conditions to be incorporated in the license pursuant to § 70.32(c).

Certain editorial changes have also been made in the amendments set forth below.

Pursuant to the Atomic Energy Act of 1954, as amended, and the Administrative Procedure Act of 1946, as amended, the following amendments to 10 CFR Part 70 are published as a document subject to codification to be effective 30 days after publication in the FEDERAL REGISTER.

32 FR 2562
Published 2/7/67
Effective 3/9/67

LICENSES TO OWN AND EXPORT SPECIAL NUCLEAR MATERIAL

Miscellaneous Amendments

On September 21, 1965, the Atomic Energy Commission published in the FEDERAL REGISTER (30 F.R. 12039) for public comment proposed amendments to 10 CFR Parts 50, 70, 115, and 140, intended as partial implementation of Public Law 88–489 to reflect the Commission's authority to issue licenses to receive title to, own, acquire, deliver, import, or export under the terms of an agreement for cooperation arranged pursuant to section 123 of the Atomic Energy Act of 1954, as amended, special nuclear material.

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments within 60 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. After careful consideration of the comments received in response to the notice of proposed rule making and other factors involved, the Commission has adopted the amendments set forth below which, except as noted, are the same as those set out in the notice of proposed rule making.

Section 70.23, *Requirements for the approval of applications*, has been amended to exclude from its purview applications for licenses to export special nuclear material. [Requirements for applications for licenses to export special nuclear material are covered in § 70.22(c) and conditions for the issuance of such licenses are set out in § 70.31(d).] That amendment was not included in the notice of proposed rule making published on September 21, 1965. However, since the revision of § 70.23 is merely a change in organization and has no substantive effect, the Commission has found that general notice of proposed rule making and public procedure thereon are unnecessary in connection with that amendment.

Proposed § 70.22(b) has been redesignated § 70.22(c) and revised to eliminate the requirement that an application for a license to export special nuclear material contain a certificate by the government of the country of destination certifying that the material will be received and used in that country within the scope of and consistent with the terms of an agreement for cooperation made in accordance with section 123 of the Act. The Commission has decided to obtain such information through direct government-to-government communications.

Proposed § 70.44(a)(2) has been revised to permit a secured creditor to take possession of licensed special nuclear material under a mortgage, pledge, or lien either by the issuance of a license by the Commission authorizing such possession or by a license transfer pursuant to § 70.36. In this respect, the

section, as revised, will be consistent with the equivalent creditor regulations in § 50.81 of 10 CFR 50 pertaining to facilities and will take account of the existing provisions in § 70.36 for transfer of special nuclear material licenses.

The amendments set forth below revise the affected parts of the Commission's regulations to provide for the private ownership, export and import of special nuclear material authorized by P.L. 83–489. Section 70.44, for example, reflects the Commission's authority to consent to the creation of a lien on privately owned special nuclear material.

Paragraph (c) of § 70.22 prescribes the contents of an application for export of special nuclear material. As required by amended section 53 of the Act, such exports must be under an agreement for cooperation arranged pursuant to section 123. Most of the existing agreements for cooperation were entered into under circumstances contemplating government-to-government transfer of special nuclear material, and will need to be amended or otherwise formally clarified before export licenses may be issued under them.

The notice of proposed rule making published September 21, 1965, indicated that the Commission intended to consider amendments to Part 70 regarding accountability and reporting requirements which would provide specific instructions for appropriate reporting of privately owned special nuclear material. Proposed amendments to Part 70 containing such provisions were published for comment on March 29, 1966 (31 F.R. 5075) and the comments received in response to the notice of proposed rule making are under consideration.

Pursuant to the Atomic Energy Act of 1954, as amended, and the Administrative Procedure Act of 1946, as amended, the following amendments of 10 CFR Parts 50, 70, 115, and 140 are published as a document subject to codification to be effective 30 days after publication in the FEDERAL REGISTER.

33 FR 9809
Published 7/9/68
Effective 8/8/68

General License for Ownership of Special Nuclear Material

The Atomic Energy Commission has amended its regulation, "Special Nuclear Material", 10 CFR Part 70, by the addition of a new § 70.20, providing a general license for ownership of special nuclear material. A general license is effective without the filing of an application with the Commission or the issuance of licensing documents to a particular person.

The general license includes the right both to receive and transfer ownership of special nuclear material. The amendment does not affect the Commission's existing rules applicable to transfer, receipt, possession, use, import, or export of special nuclear material.

Ownership alone of special nuclear material does not present any problems of radiation safety or the common defense and security. It is expected that the general license will simplify and expedite the Commission's regulatory processes without prejudicing in any way Commission controls over possession, use and physical transfer of special nuclear material. General licenses for the ownership of byproduct material and source material are already included in Parts 31 and 40, respectively. The addition of § 70.20 makes Part 70 consistent with those parts in that respect.

The new § 70.20 has the effect of relieving persons of the necessity of filing applications for specific licenses for ownership of special nuclear material. Therefore, the Commission has found that good cause exists why general notice of proposed rule making and public procedures thereon are unnecessary.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendment of 10 CFR Part 70 is published as a document subject to codification, to be effective 30 days after publication in the FEDERAL REGISTER.

36 FR 145
Published 1/6/71
Effective 2/5/71

Fees for Facilities and Materials Licenses

See Part 170 Statements of Consideration.

36 FR 17573
Published 9/2/71
Effective 9/2/71

On May 28, 1971, the Atomic Energy Commission published in the FEDERAL REGISTER (36 F.R. 9786) proposed amendments of its regulations in 10 CFR Part 70, "Special Nuclear Material," which would provide for Commission review, prior to construction of the site and design bases for plutonium processing and fuel fabrication plants for which a license is sought.

All interested persons were invited to submit written comments and suggestions for consideration in connection with the proposed amendments within 60 days after publication of the notice of proposed rule making in the FEDERAL REGISTER. Upon consideration of the comments received and other factors involved, the Commission has adopted the amendments set out below. These amendments are identical to those published for comment except for minor changes reflecting amendments to Part 70 which were published in the FEDERAL REGISTER subsequent to May 28, 1971.

The requirements of the amendments will apply to plants for the manufacture of plutonium reactor fuel and plants for the conduct of plutonium fuel research and development activities. These plants typically process kilogram quantities of plutonium.

Under the amendments, an application for a license to possess and use special nuclear material in a plutonium processing and fuel fabrication plant must be filed at least 6 months before the beginning of plant construction. Such an application is required to contain, in addition to other required information, a description of the plantsite, a description and safety assessment of the design bases of the principal plant structures, systems and components, and a description of the quality assurance program to be applied to the design, fabrication, construction, testing and operation of structures, systems and components of the plant. Applicants for such licenses should select sites which are at reasonable distances from densely populated areas.

The purpose of the Commission's preconstruction review will be to determine whether the applicant's design bases for the principal structures, systems and components, and its quality assurance program provide reasonable assurance of protection against natural phenomena and the consequences of potential accidents. The Commission will approve construction of the principal structures, systems and components of a plutonium processing and fuel fabrication plant when it has made a favorable safety determination. Failure to obtain Commission approval prior to beginning of construction may be grounds for denial of a license to possess and use special nuclear material in a plutonium processing and fuel fabrication plant.

The Commission is developing appropriate siting and general design criteria for plutonium processing and fabrication plants which will include consideration of protection against adverse natural phenomena as well as inplant accidents. In the interim, the siting principles of 10 CFR Part 100, the General Design Criteria for nuclear power reactors in 10 CFR Part 50 and the criteria used by the Commission to evaluate the adequacy of the design of irradiated fuel reprocessing plants will be used to the extent pertinent. The criteria set forth in appendix B of 10 CFR Part 50, "Quality Assurance Criteria for Nuclear Powerplants," will be used in determining the adequacy of the quality assurance programs.

Existing licensed plutonium processing and fabrication plants will be examined with the objective of improving to the extent practicable their ability to withstand adverse natural phenomena without loss of capability to protect the public and their capability for coping with inplant accidents.

The Commission has found that, because of the importance of the amendments in regard to the public health and safety, good cause exists for making the amendments effective without the customary 30-day notice. Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 70, are published as a document subject to codification to be effective upon publication in the FEDERAL REGISTER (9–2–71).

37 FR 5745
Published 3/21/72
Effective 3/21/72

Prohibition of Site Preparation and Related Activities

See Part 50 Statements of Consideration.

38 FR 30533
Published 11/6/73
Effective 12/6/73 (§§ 70.22(g), 70.23(a)(9) & 73.30(e))
Effective 3/6/74

Amended Requirements for Material in Transit

See Part 73 Statements of Consideration.

38 FR 30537
Published 11/6/73
Effective 12/6/73

Physical Protection of Plants and Materials

See Part 73 Statements of Consideration.

38 FR 30542
Published 11/6/73
Effective 12/6/73

Revised Control and Accounting Requirements

On February 1, 1973, the Atomic Energy Commission published in the FEDERAL REGISTER (38 FR 3077) proposed amendments to its regulations in 10 CFR Part 70 which would revise the materials control and accounting requirements for special nuclear material.

Interested parties were invited to submit comments and suggestions for consideration in connection with the proposed amendments within 60 days after publication in the FEDERAL REGISTER. Upon consideration of the comments received, and other factors involved, the Commission has adopted the proposed amendments, with certain modifications as set forth below.

Significant differences from the proposed amendments published for comment are: (1) A change in the detailed control and accounting requirements for plutonium containing 80 percent or more by weight of the isotope Pu-238; (2) addition of a requirement for tamper-safing procedures to include control of the tamper-safing devices and records of the date and time of tamper-safing; (3) addition of requirements for the identification and control of in-process items containing special nuclear material; (4) changes in the date of the first inventory required under the amended regulation and the date by which the licensee's description of his program to meet the amended regulations must be submitted to the Commission have been made; (5) a change in the required frequency of plutonium inventories has been made from one to two months; (6) clarification of the description of that portion of a fuel reprocessing plant requiring only 6-month inventories; (7) addition of a five-year retention period for material balance and inventory records; (8) provision for licensees to apply for a license or amendment authorizing alternate limits of error (LE) for material unaccounted for (MUF) than specified in the proposed amendments and deletion of the limit of error of MUF requirements to be effective after January 1, 1976; (9) modification of LEMUF requirements to specify that they apply to a total plant balance for inprocess material of each type; (10) modification of the absolute minimum quantity limits for LEMUF to reflect a less stringent requirement for low enriched uranium; (11) modification of the material balance requirements to require accounting for plutonium only on the element basis; (12) deletion of specific remeasurement criteria for material inventory that has not been tamper-safed to permit the licensee flexibility in this remeasurement of SNM; and (13) addition of a footnote to clarify that the regulations do not require plant shutdown and cleanout for physical inventory. In addition, editorial changes were made.

The following discussion pertains to the respective items (1) through (13) above:

(1) The rule set forth below requires that the control and accounting requirements for plutonium containing 80 percent or more by weight of the isotope Pu-238 be the same as those for low-enriched uranium. This isotope of plutonium, because of the heat generated within the material, is, like low-enriched uranium, an improbable fissile material for use in nuclear weapons and does not require the controls specified in Part 70 for strategic material such as high-enriched uranium and plutonium having higher Pu-239 isotopic content. This isotope at these concentrations, i.e., greater than 80 percent, does not exist in quantity because it is produced only by special irradiation programs and not ordinarily as a product from power reactors

(2) The rule set forth below specifies that tamper-safing devices must be controlled and that the date and time of application of the devices be recorded. Unless it can be assured that the tamper-safing devices are available only to authorized persons and that there is documented evidence that the devices were applied at a time appropriate to ensure the integrity of the measurement of the material, tamper-safing cannot be an effective control mechanism.

(3) The proposed rule required item identification and control for items containing special nuclear material that had been tamper-safed and were not in process. It is equally as important to identify and control items in process that contain special nuclear material. The rule set forth below requires identification and control of items containing special nuclear material whether in process or not in process.

(4) Section 70.51(e)(2) of the proposed amendments would have required the licensee to perform the first inventory under the amended rule within 90 days after the effective date of the rule. However, § 70.51(g) would not have required the licensee to submit a description of his procedures to be used to comply with the requirements of amended rule until 120 days after the effective date. Based on comments received, the Commission believes the licensee should develop and submit a description of his inventory procedures prior to taking an inventory following the amended rule. Accordingly, the rule set forth below provides effective dates such that the additional material control and accounting requirements will become effective 6 months after publication of these amendments, the first inventory under the revised rule must be taken within 6 months after publication of these amendments, and the licensee's program description must be submitted to the Commission within 4 months after publication of these amendments. Until the submittals have been reviewed and their acceptability determined, licensees will be expected to follow the material control and inventory program described in their submittals.

(5) After evaluating comments, it was determined not to be feasible for licensees to meet the 0.5 percent limit on the limit of error of material unaccounted for (LEMUF) on a monthly balance for plutonium as specified in the proposed amendments. To meet the 0.5 percent limit licensees indicated that plant shutdown and clean-out would be required. Even then there were some questions whether the 0.5 percent limit would be met. To have a higher throughput factor for the LEMUF limit, the rule set forth below requires conduct of plutonium inventories every two months instead of every month as required by the proposed amendment. The two-month inventory interval for plutonium (other than in a reprocessing facility) makes the limits and inventory interval for plutonium the same as for high enriched uranium.

(6) The proposed rule identified that part of a fuel reprocessing plant which would have required physical inventory at only 6-month intervals. Comments indicated that the intent of this requirement was not clear. The rule set forth below more specifically identifies that portion of the fuel reprocessing process that is inaccessible and not as susceptible to diversion of special nuclear material and therefore does not require as frequent inventories as more accessible processes and materials.

(7) The rule set forth below specifies a five-year retention time for material balance and inventory records. This requirement is consistent with International Atomic Energy Agency records retention requirements and will make the U.S. records retention requirements compatible with IAEA safeguards for purpose of the Treaty on the Nonproliferation of Nuclear Weapons.

(8) At the time that the proposed rules were formulated, it was recognized that some types of processes and operations initially could not meet the proposed regulations and provision was made for application for exception to the specified requirements. Based upon comments received and upon reconsideration, the Commission has determined that specific provision should be made in the regulations for consideration of alternative LEMUF limits. The regulation has been revised accordingly. If a licensee has demonstrated through actual experience that he cannot meet the specified LEMUF limits, he may apply to the Commission for imposition of limits that can be met. These alternate limits will be approved if the licensee demonstrates that he has made reasonable efforts and cannot meet the prescribed limits and he has or will initiate a program to enable him to meet the prescribed limits. In view of this alternate provision and in consideration of the many uncertainties in the developing technology, prediction of firm LEMUF limits two to three years in the future was not considered feasible. Licensee performance and technological developments will be evaluated on a continuing basis and more stringent LEMUF limits established as the need is indicated and as the state-of-the-art permits.

(9) The proposed amendments were

not clear as to which material balance the LEMUF limits applied. The rule set forth below specifies that the LEMUF limits apply to the total plant in-process material balance for a given material type. While balances still will be needed for material balance areas and limits of error calculated for such balances to permit MUF evaluation, the LEMUF limits specified in the rule set forth below do not apply for such balances unless they consist of the total plant in-process balance for a given material type.

(10) The proposed amendments specified absolute quantities for the LEMUF limits below which the relative percentage limits would not apply. The proposed limits for low enriched uranium were more stringent at the 3–4 percent enrichment level on an effective kilogram basis than the limits for plutonium, U-233, and high enriched uranium. To provide proper gradation of requirements the limits for low enriched uranium have been modified.

(11) The proposed amendments would have required calculation of an in-process material balance, MUF, and LEMUF for both element and isotope for plutonium. Adequate control can be maintained for plutonium using only the element balance. The rule set forth below requires calculation of an in-process material balance, MUF and LEMUF for plutonium element only.

(12) The proposed amendments specified confidence levels for statistical sampling plans to be used for verification of previous measurements for inventory purposes. Comments indicated that these statistical sampling plan statements were interpreted to mean specific requirements for the use of the specified plans. There also appeared to be some confusion as to the interpretation of the confidence levels being required. The rule set forth below specifies only that measurements of SNM on inventory whose integrity is not ensured by tamper-safing shall be vertified by remeasurement. The licensee may select appropriate remeasurement procedures and sampling plans. These plans will be included in the description of his program which will be submitted to the Commission.

(13) Comments indicated that the inventory criteria in the proposed amendments were interpreted as requiring plant shutdown and cleanout for physical inventory. Such is not required so long as process inventory measurements can be made on a dynamic basis to sufficient precision and accuracy to meet the LEMUF limits specified in § 70.51(e)(5)(ii). The rule set forth below contains a footnote to this effect. Many comments indicated that the licensee should be given flexibility to develop "innovative" inventory techniques to preclude costly plant shutdown. Such flexibility had always been the intent of the proposed amendments.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments of Title 10, Chapter I, Code of Federal Regulations, Part 70 are published as a document subject to codification.

38 FR 32784
Published 11/28/73

Correction

In FR Doc. 73-23552, appearing at page 30537, in the issue for Tuesday, November 6, 1973, the following changes should be made in § 70.32(f):

38 FR 33968
Published 12/10/73
Effective 3/11/74

Transfer of Radioactive Material; Requirements

See Part 30 Statements of Consideration.

39 FR 26279
Published 7/18/74
Effective 8/19/74

Environmental Protection; Licensing and Regulatory Policy and Procedures

See Part 51 Statements of Consideration.

39 FR 37765
Published 10/24/74
Effective 11/25/74

Fundamental Nuclear Material Controls

On September 25, 1973, the Atomic Energy Commission published in the FEDERAL REGISTER (38 FR 26735) proposed amendments to its regulations in 10 CFR Part 70 which would specify fundamental nuclear material controls required to be established, maintained, and followed by licensees authorized to possess at any one time and location more than one effective kilogram of special nuclear material in unsealed form.

Interested parties were invited to submit comments and suggestions for consideration in connection with the proposed amendments within 60 days after publication in the FEDERAL REGISTER. Upon consideration of the comments received, and other factors involved, the Commission has adopted the proposed amendments with certain modifications as set forth below.

These amendments provide the basic criteria for detailed licensee material control and accounting systems. The Commission intends that these criteria provide the basis for the eventual development of material control and accounting systems utilizing advanced technology such as nondestructive analysis and automatic data processing to provide real-time accurate control of and accounting for special nuclear material.

Significant differences from the proposed amendments published for comments are: (1) Addition of language to clarify the intent that the licensee's description of his fundamental nuclear material controls will be included in his license conditions and to permit changes in his program without AEC approval provided the changes do not decrease the effectiveness of the program; (2) revision of the requirement for management review of the licensee program to clarify the scope of the review and to permit the use of an independent audit organization for the review; (3) revision of the material balance area criteria to clarify the extent of measurements required for internal transfers and to exempt certain items from internal transfer measurement; (4) revision of the item control area criteria to include a requirement for tamper-safing; (5) revision of the measurement requirements to exempt samples of less than 10 grams from measurement; (6) revision of the shipper-receiver difference evaluation requirements to be more specific as to the type and extent of evaluation required, (7) revisions of the internal handling control requirements to require current knowledge of special nuclear material within the plan rather than continuous knowledge; (8) revision of the scrap control requirements to apply only to scrap generated in a licensee's own plant and to change the scrap retention time limits from 3 months to 6 months for plutonium, U-233, and high-enriched uranium and to 12 months for low-enriched uranium and plutonium containing 80 percent or more of the isotope Pu-238; (9) deletion of the retention time limits for disposalbe waste; (10) deletion of the 30 percent limit on the scrap uncertainty contribution to the LEMUF; and (11) addition of a definition of special nuclear material scrap. In addition, editorial changes were made.

The following discussion pertains to the respective items (1) through (11) above:

(1) The proposed rule would have deleted paragraph (c) of § 70.32 which makes the licensee's program for compliance with the fundamental nuclear material controls a part of the license conditions. To provide a mechanism for greater control of the licensee's program by the AEC, this paragraph has been retained in the rule set forth below with appropriate revisions to the references therein, including the provision permitting the licensee to change the program without AEC approval provided the change does not decrease the effectiveness of the program.

(2) The proposed rule would have required a management review and audit by individuals in licensee management. Industry comments suggested that this could be accomplished by qualified auditing organizations and that provision should be made for such. The rule set forth below requires that the review and audit be conducted by individuals independent of the material control and accounting functions of the licensee organization but does not require that such individuals be a part of the licensee organization. In addition, comments indicated some confusion as to the scope of the review. The rule set forth below addresses this point briefly. Additional guidance will be provided by a regulatory guide on this subject which is now in preparation.

(3) Industry comments indicated that the material balance area (MBA) management criteria were not clear. The phrase in the proposed amendments in paragraph (d)(1) of § 74.58 "* * * can be measured.", was interpreted to mean that material was required to be measured as it entered or left an MBA. This is not necessarily the case. If a measurement made earlier in the process remains valid, e.g., by tamper-safing or on a sealed, identifiable fuel rod, another measurement is not required for transfer from an MBA nor is the internal plant MBA receiving such an item required to measure the item. The rule set forth below specifies that items transferred into or out of MBAs shall be "represented by

a measured value." In addition, industry comments suggested that certain items transferred between in-plant MBAs need not be measured to provide adequate control. The rule set forth below exempts from internal MBA measurement, items which have been determined by other means to contain less than 10 grams of U–235, U–233, or plutonium each; plutonium-beryllium sources; and reactor-irradiated fuels involved in research, development, and evaluation programs in facilities other than fuel reprocessing plants.

(4) The proposed rule specified that item control in Item Control Areas be based on previously determined special nuclear material quantities. The rule set forth below includes a requirement for tamper-safing or otherwise providing assurance that such prior measurements are valid.

(5) Industry comments suggested that certain items could be exempted from the measurement requirements of paragraph (e) of § 70.58 without adverse effect on the material control. The rule set forth below exempts from the measurement requirement samples which have been determined by other means to contain less than 10 grams of U–235, U–233, or plutonium each and reactor-irradiated fuels involved in research, development, and evaluation programs in facilities other than fuel reprocessing plants. The rule also exempts plutonium-beryllium sources from all of the measurement requirements.

(6) Industry comments raised several questions regarding the type and the extent of shipper-receiver evaluation that would be required by the proposed amendments. The rule set forth below identifies specifically the bases for shipper-receiver difference evaluations, specifies the level of statistical significance at the 95 percent confidence level, and establishes minimum quantities below which evaluations are not required.

(7) The proposed amendments would have required continuous knowledge of the identity, quantity, and location of special nuclear material within a facility. Comments indicated that a definition of "continuous" was needed to clarify the intent of this requirement. The intent is more accurately described by the word "current" rather than by "continuous." "Continuous" would mean knowledge without interruption whereas the intent was for the licensee to maintain such knowledge on a timely basis. The precise definition of the word "current" in this context will depend on the specific system. The rule set forth below requires current knowledge rather than continuous knowledge.

(8) The proposed amendments would have required licensees to process scrap so that no item of scrap would remain on inventory for more than three months. Industry comments noted that, in a plant that recovers scrap for others, this could be an impractical requirement since many scrap jobs are scheduled more than three months in advance and shipments often are received more than three months prior to the start of a campaign. Comments also noted that, for scrap processed on the same site on which it is generated, it may require more than three months to accumulate enough scrap to make it practical to operate the scrap recovery process. It also was suggested that the retention time should be related to the strategic significance of the material.

Comments suggested further that the limit of error of material unaccounted for (LEMUF) requirements of paragraph (e)(5) of § 70.51 would adequately control special nuclear material in the form of scrap. The LEMUF limits provide control of the precision of the scrap measurements. However, a systematic error in scrap measurement could be used to mask a theft. Since scrap measurements are almost always by nondestructive techniques, the only way to assure that no systematic error has been introduced, either inadvertently or otherwise, is recovery or processing to a more accurately measurable form. Since the systematic error probably would not be large, a check by recovery need not be as frequent as the inventory intervals specified in paragraph (e) of § 70.51.

The rule set forth below requires that scrap generated onsite and not measured to within ±10 percent shall not remain on inventory longer than 6 months for plutonium, U–233, and high enriched uranium or longer than 12 months for low-enriched uranium and plutonium containing 80 percent or more of the isotope Pu–238.

(9) The proposed amendment would have required that disposable waste be kept on inventory no longer than three months. Since disposable waste normally has low special nuclear material content, the effect of measurement uncertainties and biases on the material balance would not be significant whether the wastes were on inventory for three months or longer. The proposed disposable waste retention limit is not included in the rule set forth below.

(10) The proposed rule would have limited the material balance uncertainty component due to scrap to 30 percent of the total material balance uncertainty. Comments indicated that this requirement was redundant and unnecessarily restrictive. It was suggested that the licensee should be free to operate with any mix of material balance components he chooses provided he can meet the LEMUF limits specified in paragraph (e)(5) of § 70.51. Experience has shown that one of the major contributing factors to not meeting the LEMUF limit of § 70.51 (e)(5) is large scrap measurement uncertainties. However, if the licensee can meet the specified limits, there is no need to restrict the component mix. A limit on the uncertainty component of LEMUF contributed by scrap measurement is not included in the rule set forth below.

(11) Comments suggested that definitions of scrap and disposable waste be included in the rule. The rule set forth below includes a definition of special nuclear material scrap but does not include a definition of disposable waste because the rule does not use the term.

Pursuant to the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments of Title 10, Chapter I, Code of Federal Regulations, Part 70 are published as a document subject to codification.

39 FR 39020
Published 11/5/74
Effective 12/6/74

PART 70—SPECIAL NUCLEAR MATERIAL

Criticality Accident Alarm Systems

On October 12, 1973, the Atomic Energy Commission published in the FEDERAL REGISTER (38 FR 28301) a proposed amendment of 10 CFR Part 70 of its regulations which would revise the criteria for criticality accident alarm systems in §§ 70.22 and 70.24 to provide greater conformity with American National Standards N16.2–1969, "Criticality Accident Alarm System," and N16.1–1969, "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors." The amendments were intended to increase flexibility for licensees with no loss of safety. All interested persons were invited to submit written comments and suggestions in connection with the proposed amendments within 45 days after publication of the notice of proposed rulemaking in the FEDERAL REGISTER. Seven written comments were received, and some changes in the amendment have been made in response to those comments. The changes made, however, do not affect the main substance of the proposed amendment which was published for comment.

The phrase in the proposed paragraph (a)(1) of § 70.24 exempting special nuclear material from such alarm systems "when it is stored in a critically safe container or storage array," was questioned. Upon reconsideration the Commission has deleted the phrase in question. While such containers may be critically safe in limited quantities, very large arrays under conditions of storage could be critical. Thus an alarm is necessary where large arrays of such containers could be formed. In transportation vehicle size limits the number of containers in the array. Consequently, there is no danger of criticality from shipments in transit packaged in accordance with Part 71 requirements, and alarms are not necessary for such material in transit.

Licensees may request an exemption for materials stored while packaged in accordance with Part 71 requirements under § 70.14, "Specific Exemptions," or § 70.24(b). The request should demonstrate that precautions are taken to assure separation of containers such that there is no possibility of criticality associated with an array of containers.

The proposed requirement in § 70.24 (a)(1) for two independent detectors was also questioned. Upon reconsideration the word "independent" is deleted.

Two comments pointed out that the proposed wording of § 70.24 (as well as the presently effective wording) would require Part 70 licensees to have alarm systems in areas where only small quantities of special nuclear material would be present (e.g., laboratories with small samples or isotopic neutron sources). Although there may be such areas in a facility, it is not practicable in a general regulation to define precisely all possible conditions under which criticality could not occur. The proposed wording is therefore retained. Licensees may apply for exemptions for specific areas under § 70.14, "Specific Exemptions," or § 70.24(b), an exemption clause for that paragraph.

One comment urged deletion of the more restrictive mass limits in § 70.24(a) when small quantities of graphite are present since small quantities do not significantly affect the minimum critical mass. These more restrictive mass limits

were not meant to apply to small quantities of these moderators. The word "massive" has, therefore, been inserted before the word "moderators" in the first sentence of § 70.24(a).

The use of the "rad" as a unit of dose instead of the "rem" was questioned. The International Commission on Radiation Units and Measurements in ICRU Report 19 (1971) states that "rad" is the special unit of "absorbed dose" and "rem" is the special unit of "dose equivalent." They note that dose equivalent "may be used • • • in the region of, or below, the applicable maximum permissible dose equivalent. It should not be used for high level accidental exposures." A reason for this restriction is that the relative biological effectiveness (RBE) for neutrons is quite different for the acute effects of large doses compared with the long term chronic effects of low level doses. For example, it has been found that the RBE of neutrons for 30 day mortality in large mammals is less than one.[1] Accordingly, the use of the term "rad" has been retained.

The problem of establishing a valid alarm set-point for a detector that detects only gammas or neutrons when different gamma/neutron ratios can occur was pointed out. This problem is discussed in the Appendix to American National Standard N16.2–1969, "Criticality Accident Alarm System." In that Appendix an alarm set-point and maximum detector-source distance are calculated which are applicable to a very wide variety of possible situations. Thus a single set-point and maximum detector-source distance are applicable for the great majority of situations. The standard N16.2 1969 is currently under review by American Nuclear Society Subcommittee 8, and the subcommittee anticipates that the revised version of the standard will continue to include such calculations in the Appendix. It is believed that the guidance in the Appendix can be used as easily as the specific set-point and maximum detector-source distance previously specified in § 70.24 of the Commission's regulations and would provide for greater flexibility by the user.

One comment suggested that low fission rate criticality accidents could occur which would not be large enough to set off the alarm. While such an occurrence may be theoretically possible, it is considered extremely unlikely. Any accident which is self-terminating must liberate enough energy to provide a shutdown mechanism. While a system could conceivably liberate this energy over a long time, this would require reactivity control of such delicacy that it is not to be expected in process accidents.

The proposed rule published for public comment would have eliminated the requirement for an alarm when sufficient water covered the special nuclear material, so that a significant dose to workers would not be possible. However, in view of the possibility of special nuclear material going critical and then being inadvertently lifted to the surface or being lifted to the surface and then going critical, the language of the existing § 70.24 has, therefore, been retained.

Section 70.24 has also been reorganized so that the requirements applicable under the "grandfather clause" are explicitly stated in paragraph (a)(2) of § 70.24.

In accordance with the Atomic Energy Act of 1954, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendment of Title 10, Chapter I, Code of Federal Regulations, Part 70 is published as a document subject to codification.

40 FR 8774
Published 3/3/75
Effective 3/3/75

Energy Reorganization Act: Revisions to Chapter I to Reflect Organizational and Procedural Changes

See Part 2 Statements of Consideration.

40 FR 14085
Published 3/28/75
Effective 3/3/75

PART 31—GENERAL LICENSES FOR BYPRODUCT MATERIAL

PART 70—SPECIAL NUCLEAR MATERIAL

Organization and Procedural Changes; Correction

In FR Doc. 75–5205, appearing at page 8774, in the issue for March 3, 1975, the following changes should be made:

40 FR 16047
Published 4/9/75
Effective 4/9/75

PART 70—SPECIAL NUCLEAR MATERIAL

Organization and Procedural Changes

Correction

In FR Doc. 75–6104 appearing at page 14085 of the issue for Friday, March 28, 1975, in the first column on page 14086 the paragraphs numbered (1) through (4) which precede paragraph (a) of § 70.11 should be removed and made part of footnote 10 to that section, the footnote to read as follows:

40 FR 33651
Published 8/11/75
Effective 9/11/75

PART 70—SPECIAL NUCLEAR MATERIAL

Measurement Control Program for Special Nuclear Materials Control and Accounting

On October 31, 1974, the Atomic Energy Commission published in the FEDERAL REGISTER (39 FR 38392) proposed amendments to its regulations in 10 CFR Part 70 which would specify criteria for a measurement control program which would be required to be established and maintained by each licensee which is authorized to possess, at any one time and place, more than one effective kilogram of special nuclear material in unsealed form. Interested parties were invited to submit comments and suggestions for consideration in connection with the proposed amendments within 60 days after publication in the FEDERAL REGISTER. Upon consideration of the comments received, and other factors involved, the Commission has adopted the proposed amendments with certain modifications as set forth below.

Differences from the proposed amendments published for comment are: (1) Additions to and clarifications of the definitions contained in § 70.57(a); (2) rewording of the requirement for management reviews and audits so as not to exclude the use of an independent audit organization or of corporate auditors; (3) clarification of licensees' responsibilities to assure the quality of measurements performed by a contractor; (4) clarification of the requirement to identify and control sampling errors; (5) simplification of the requirement to provide management review and approval of procedures which pertain to the measurement control system; (6) clarification of the requirement to perform quality control engineering analyses of all measurement systems; (7) clarification of the requirement to establish traceability of measurements to the National Bureau of Standards; (8) deletion of the requirement to determine sources of analytical error such as between-operator, between-equipment and between-shift; (9) clarification of the provision allowing the combining of historical and current material control and accounting data; and (10) revision of the requirement to establish a statistical control system. In addition, editorial changes were made.

The following discussion pertains to the respective items (1) through (10) above:

(1) Comments suggested that § 70.57 (a) be expanded to include more definitions, and that some of the proposed definitions be modified. The rule set forth below contains additional definitions. Some of the proposed definitions were modified to more accurately convey the Commission's meaning with respect to the requirements of § 70.57(b).

(2) The proposed rule would have restricted the performance of audits and reviews to "trained personnel." This implied that only licensee employees could be used for this function. The revised rule allows the performance of audits and reviews by any trained individuals who are independent of responsibility for the receipt, custody, utilization, measurement, measurement quality, and shipment of special nuclear material.

(3) The question was raised as to the need for having contractors which provide measurement services meet all of the requirements of § 70.57(b). The rule set forth below excludes those portions of § 70.57(b) which are not applicable to licensee measurement contractors.

(4) The proposed rule stated that measurements, by definition, include sampling and that measurements must be traceable to certified standards. Comments suggested that in many cases certified standards are not available for performing sampling studies. Therefore, the requirement to perform mixing and sampling tests, set forth below in § 70.57 (b)(4) has been modified to permit licensees to perform such tests with well characterized special nuclear materials.

(5) The proposed rule would have required the review and approval of measurement control system procedures by management personnel whose direct responsibilities could be affected by the quality of material control and accounting measurements. Comments suggested that the determination of those man-

[1] D. G. Brown and W. F. Haywood, Health Physics, Volume 24, June 1973, page 627.

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agement personnel having such responsibility was subject to various interpretations. The rule set forth below requires only that measurement control system procedures be reviewed and approved.

(6) The proposed rule would have required that engineering analyses and evaluations be performed on measurement systems. The rule further required that said analyses and evaluations be reviewed annually to assure the continued reliability of the system. Comments indicated some misinterpretation as to the scope of said annual reviews. Comments also suggested that said annual review was redundant with the annual management review and audit required in § 70.57(b)(2). The rule set forth below requires engineering analyses and evaluations initially for all measurement systems, and thereafter whenever a significant change occurs in a component of a measurement system.

(7) Comments suggested that in certain cases measurements could not be traced directly to a certified standard because such standards are not available for each measurement method for each type of material. The rule set forth below resolves this difficulty by allowing traceability through the use of reference standards as defined in § 70.57(a).

(8) The proposed rule would have required that sources of analytical error such as between-operator, between-equipment, and between-shift be determined. Industry has suggested that the training program required in § 70.57(b)(7), as set forth below, should reduce such sources of error to an insignificant level. Also, as long as the total analytical error is controlled, that it is unnecessary to isolate individual sources of analytical error. Further, comments indicated that the cost of isolation of such sources of error would greatly outweigh the diagnostic benefits. The rule set forth below has been modified to delete the requirement to isolate such sources of analytical error.

(9) The proposed rule would have allowed under certain conditions, that material control and accounting data from the current material balance period could be combined with historical data. Comments suggested that this provision be made more definitive. The rule set forth below clarifies the requirements for the combining of data sets.

(10) Comments suggested that discarding all data which exceed control limits would (i) result in the loss of some valid measurement points, and (ii) artificially narrow the confidence band. The rule set forth below provides one set of limits for the investigation of suspect data, and another set of limits for establishing that a measurement system is out-of-control.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, and sections 552 and 553 of Title 5 of the United States Code, the following amendments of Title 10, Chapter I, Code of Federal Regulations, Part 70 are published as a document subject to codification.

40 FR 53230
Published 11/17/75
Effective 12/17/75

PART 40—LICENSING OF SOURCE MATERIAL

PART 70—SPECIAL NUCLEAR MATERIAL

Effluent Monitoring and Reporting Requirements

On October 31, 1974, the Atomic Energy Commission published in the FEDERAL REGISTER (39 FR 38392) proposed amendments to its regulations 10 CFR Part 40, "Licensing of Source Material," and 10 CFR Part 70, "Special Nuclear Material," which would specify reporting requirements regarding results of monitoring for radionuclides in gaseous and liquid effluents released to unrestricted areas from uranium milling, uranium hexafluoride production and other licensed fuel cycle activities in which special nuclear material is used.

Interested persons were invited to submit written comments or suggestions in connection with the proposed amendments by December 2, 1974. The comments received favored the adoption of the amendments but suggested changes in the proposed frequency of the reports and imposition of a requirement that licensees also file such reports with the appropriate State agency. None of the comments were substantive technical comments of an adverse nature. The reported effluent monitoring results will be public information available to anyone on request. The matter of environmental monitoring is a separate consideration of the regulations. Upon consideration of the comments received and other factors involved, the Commission has adopted the proposed amendments without modification, except for changing the proposed § 70.57 to § 70.59.

On October 11, 1974 the Energy Reorganization Act of 1974 (Pub. L. 93–438; 88 Stat. 1233) was enacted into law. This Act abolished the Atomic Energy Commission and, by section 201 established the Nuclear Regulatory Commission (effective January 19, 1975) (E. O. 11834) and transferred to that Commission all of the licensing and related regulatory functions of the Atomic Energy Commission. In addition, section 301 of the Energy Reorganization Act provides that any proceedings pending before the AEC at the time of its abolition shall, to the extent that such proceedings relate to functions transferred by the Act, be continued.

The amendments do not impose new restrictions on the concentration or amounts of effluents released to unrestricted areas from licensed activities, nor do they add any measurement requirements nor modify the concept of maintaining radiation exposures and releases of radioactive materials in effluents to unrestricted areas as low as is practicably achievable, as specified in 10 CFR 20.1.

The amendments require each licensee authorized to engage in uranium milling, or the production of uranium hexafluoride, or licensed to possess or use special nuclear materials for fuel fabrication and processing, conversion of uranium hexafluoride or scrap recovery to submit semiannual reports of the quantities of radioactive materials released to unrestricted areas. If quantities released during the reporting period are significantly above design objectives, the licensee will be required to cover that fact specifically in its reports. The information received from the licensee will provide an improved technical basis from which the Commission will continue to evaluate the potential radiation dose commitment to the public resulting from the normal operations of such facilities.

Licensees presently monitor effluent streams to determine the concentrations of radionuclides in effluents released from these fuel cycle plants. The records of measurements made are presently available to the Commission on request. Such licensees are required by the amendments to Parts 40 and 70 to make the results of those measurements available to the Commission on a periodic basis.

The Commission is now preparing effluent monitoring guides defining the type and format of information to be submitted. The guidance is expected to be available before the end of FY 1976.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 40 and 70 are published as a document subject to codification.

41 FR 16445
Published 4/19/76
Effective 4/19/76

Miscellaneous Changes to Chapter

See Part 20 Statements of Consideration.

41 FR 18300
Published 5/3/76
Effective 6/2/76

Preservation of Records

See Part 20 Statements of Consideration.

41 FR 21177
Published 5/24/76
Effective 6/2/76

Preservation of Records; Correction

See Part 50 Statements of Consideration.

41 FR 21627
Published 5/27/76
Effective 5/27/76

Clarifying and Corrective Amendments

See Part 40 Statements of Consideration.

41 FR 31521
Published 7/29/76
Effective 9/27/76

PART 70—SPECIAL NUCLEAR MATERIAL

Criticality Accident Protection Requirements

On October 11, 1974, the Atomic Energy Commission published in the FEDERAL REGISTER (39 FR 36802) proposed amendments of its regulations in 10 CFR Part 70, "Special Nuclear Material," for public comment. The amendments proposed requiring a criticality accident dosimetry capability where special nuclear material is handled, used, or stored.

The purposes of this dosimetry are to provide a method for determining which individuals were significantly exposed, and to provide estimates of neutron and gamma doses to personnel, should a criticality accident occur.

After the amendments were proposed, the Nuclear Regulatory Commission staff prepared a value-impact analysis on the effects of requiring this criticality accident dosimetry capability. The analysis indicated that while the cost of the dosimetry was found to be fairly modest, the probable value of the dosimetry was still not worth the cost. The bases of this conclusion were: (1) The future occurrence rate of such accidents was predicted to be very small; and (2) physicians experienced in the treatment of individuals who have received large doses of radiation reported that although they would wish to have dose estimates, in the event of radiation exposure, they would base their treatment entirely on physical symptoms, not on dose estimates. The principal value of the dosimetry was, it was suggested, its ability to provide a good estimate of the dose within 24 hours, before major physical symptoms are apparent, so that early preparation for the necessary medical treatment can proceed. The value of this early preparation was difficult to quantify, but was not considered significant. The probability of such earlier preparation resulting in a life saved was estimated to be very small. The value-impact analysis is available in the NRC Public Document Room, or a copy may be obtained upon request from the Office of Standards Development, Washington, D.C. 20555.

The value-impact analysis did indicate that a device, such as an indium strip, to permit immediate identification of the workers exposed to radiation from a criticality accident, was well worth the cost. Therefore, the effective rule requires this "screening" device but does not require use of a dosimeter.

Under section 301 of the Energy Reorganization Act of 1974[1] any proceedings pending before the AEC at the time of its abolition, and the establishment of the NRC, shall, to the extent that such proceedings relate to functions transferred by the Act, be continued by NRC. After careful consideration of the comments received and other factors involved, the Commission has adopted the amendments in the form set out below.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments of Title 10, Chapter I, Code of Federal Regulations Part 70, are published as a document subject to codification.

[1] Public Law 93-438 (88 Stat. 1233).

42 FR 17125
Published 3/31/77
Effective 3/31/77

PART 70—SPECIAL NUCLEAR MATERIAL

Plans for Coping With Radiological Emergencies

On June 27, 1975, the Nuclear Regulatory Commission published in the FEDERAL REGISTER (40 FR 27260), and invited written comments on, proposed regulations in the form of amendments to 10 CFR Part 70, "Special Nuclear Material." The purposes of the amendments were to set forth (1) the requirement that an application for a license to possess and use special nuclear material in fuel processing and fuel fabrication plants contain plans for coping with emergencies and (2) the minimum information that applicants should include in these emergency plans.

Interested parties were invited to submit written comments within 60 days after publication of the proposed amendments in the FEDERAL REGISTER. One comment suggested that the amendments were unnecessary because § 70.22 (a) (8) of 10 CFR Part 70 requires an applicant to provide "Proposed procedures to protect health and minimize danger to life and property (such as * * * emergency procedures, etc.)." and should be withdrawn. Currently licensees engaged in processing and fuel fabrication, scrap recovery, and conversion of uranium hexafluoride develop plans for coping with radiological emergencies based on requirements imposed as a condition of such licenses. The amendments which follow impose a requirement that radiological emergency plans shall be developed for a license to possess and use special nuclear material for processing and fuel fabrication, scrap recovery, or conversion of uranium hexafluoride. They also go beyond 10 CFR § 70.22(a) (8) by establishing minimum requirements for these emergency plans. Two commenters asserted that the amendments should not refer to Sections II and IV of Appendix E to 10 CFR Part 50. Their concern was that reference to Part 50 and to the Preliminary Safety Analysis Report in Section II in particular might lead to confusion regarding the Part 70 licensing sequence and requirements. To avoid this possible concern, the proposed amendments have been revised to eliminate the references to Appendix E in the body of the text. Another comment questioned the adaquacy of the present Appendix E for development of emergency plans. Based on experience, the staff considers that Appendix E does provide the necessary framework of regulatory requirements for establishing adequate radiological emergency plans. However, guidance concerning certain related aspects, such as implementation on the part of licensees and development of supportive interfaces between licensees and State and local government emergency response organizations, requires improvement. A Regulatory Guide to provide additional guidance in these areas is being developed by the staff. Section IV of Appendix E contains an appropriate listing of the elements which, as a minimum, should be included in radiological emergency plans of licensees to possess and use special nuclear material for processing and fuel fabrication, scrap recovery, or conversion of uranium hexafluoride. These elements are similar to the current requirements imposed as a condition of these licenses. Since Section IV of Appendix E to 10 CFR Part 50 contains an appropriate description of the required information, and since it is an established part of NRC regulations, a footnote has been added indicating that this information should be included in such emergency plans. There is no intent, thereby, to establish a two step review process of the type used for production and utilization facilities. Another comment noted that the proposed amendments only addressed fuel processing and fuel fabrication plants and stated that a definition should be included in § 70.4 if the amendments were intended to cover less than the scope of activities licensed under 10 CFR Part 70. In order to clarify this ambiguity, revisions have been made (1) to eliminate the references to "fuel processing and fuel fabrication plants," and (2) to specify that radiological emergency plans are required for a license to possess and use special nuclear material for processing and fuel fabrication, scrap recovery, and conversion of uranium hexafluoride. The revised provision in § 70.23(a)(11) that plans be "adequate" instead of "adequate to protect public health and safety and prevent damage to property" is made to conform with parallel language in preceding clauses.

On the basis of the foregoing and after careful consideration of the comments received and other factors involved, the Nuclear Regulatory Commission has adopted these amendments in the form set forth below.

Since these amendments codify requirements already being imposed for developing emergency plans, good cause exists for making the amendments effective upon publication.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to Title 10, Chapter I, Code of Federal Regulations, Part 70, is published as a document subject to codification.

42 FR 28891
Published 6/6/77
Effective 7/6/77; §§21.6, 21.21(a), and 21.51 effective 1/6/78
(7/6/77 effective date extended to 8/10/77)

Reports to the Commission Concerning Defects and Noncompliance

See Part 21 Statements of Consideration.

43 FR 6915
Published 2/17/78
Effective 5/3/78

Export and Import of Nuclear Facilities and Materials

See Part 110 Statements of Considerations.

43 FR 11962
Published 3/23/78
Effective 6/6/78

Licensee Safeguards Contingency Plans

See Part 73 Statements of Consideration.

43 FR 14007
Published 4/4/78
Effective 6/6/78

Licensee Safeguards Contingency Plans; Correction

See Part 73 Statements of Consideration.

44 FR 17479
Published 3/22/79
Effective 6/5/79

Timely Notification of Discontinued Licensed Activities

See Part 30 Statements of Considerations

44 FR 26850
Published 5/8/79
Effective 6/7/79

10 CFR Part 70

General License Requirements For Any Person Who Possesses Formula Quantities of Strategic Special Nuclear Material (SSNM) In Transit Subject to Certain Requirements

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is amending its regulations to remove the exemption to licensing for carriers and other persons who possess or control formula quantities of strategic special nuclear material for the purpose of transport or storage incident to transport. Under the amendment a general license is issued to any person who possesses, or who exercises control over, formula quantities of strategic special nuclear material in transit. The general license will require such persons to be responsible for assuring that the material in their possession is protected against theft and sabotage by a security system which is implemented in accordance with a Transportation Security Plan that has received prior NRC approval. The general license would bring persons who possess or control formula quantities of strategic special nuclear material in transit directly under NRC physical protection regulations.

EFFECTIVE DATE: June 7, 1979.

FOR FURTHER INFORMATION CONTACT: Mr. R. J. Jones, Chief, Safeguards Standards Branch, Division of Siting, Health and Safeguards Standards, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, 301-443-5907.

SUPPLEMENTARY INFORMATION: On May 24, 1978, the NRC published a proposed amendment to 10 CFR 70, "Domestic Licensing of Special Nuclear Material" (43 FR 22215). The amendment proposed to revise § 70.12 and add a new § 70.20a. Interested persons were invited to submit comments or suggestions in connection with the proposed amendment within 30 days after publication in the **Federal Register.** The comment period expired June 23, 1978. One comment was received from a licensee. The commenter offered the observation that the proposed amendment incorporates many references to other Sections of 10 CFR Part 70 which may be a problem for carriers heretofore not subject to NRC regulations. The commenter suggested that a revision to § 70.12 should provide a self-contained general license setting forth specifically applicable terms and conditions. The commenter offered to submit such a revision to § 70.12 to the NRC by July 21, 1978. However, the proposed revision was not received.

In response to the commnenter's remarks, staff believes that it is not necessary to repeat the details of each applicable paragraph of 10 CFR Parts 70 and 73 in such a detailed general license requirement under a revision to § 70.12. To do so would not necessarily simplify the proposed rule, but would lead to duplication of some sections of 10 CFR Parts 70 and 73. Therefore, staff believes that the method used in the proposed rule, that is, cross-referencing, is a reasonable and prudent method. Thus, the NRC is adopting the proposed amendment with only editorial and clarifying changes.

As initially proposed, paragraph 70.12 will remove the exemption to licensing for carriers and other persons who possess or control formula quantities of strategic special nuclear material for the purpose of transport or storage incident to transport. The new § 70.20a grants a general license to any person who would possess or control formula quantities of strategic special nuclear material in transit. The scope of the general license granted under the proposed amendment would be limited to possession only and will be effective during the course of a shipment. The amendment will not affect the exemption to licensing for carriers and other persons under § 70.12 who transport all other forms of special nuclear material subject to NRC regulations. Also, the amendment will not apply to transient shipments, that is, shipments which originate in a foreign country with destinations in a foreign country and which are not offloaded or transferred within the United States.

The amendment will subject the general licensee to certain enumerated Sections of Parts 70 and 73. The general license requires that a transportation security plan be submitted and receive prior NRC approval before any person could possess formula quantities of strategic special nuclear material for the purpose of transport or storage incident to transport. The plan submitted by a carrier or other person for the purpose of this general license may incorporate by reference the terms of a transportation security plan already approved by the NRC.

The amendment being adopted will codify practices and procedures presently conducted on a voluntary basis by carriers and other persons and will not require the filing of applications with the Commission or the issuing of licensing documents to particular persons by the Commission.

The promulgation of the amendment will not result in any activity that affects the environment. Accordingly, the Commission has determined under the National Environmental Policy Act, the Council of Environmental Quality guidelines, and the criteria of 10 CFR Part 51, that neither an environmental impact statement or environmental impact appraisal to support a negative declaration for the proposed amendment to 10 CFR Part 70 is required.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendment to Title 10, Chapter I, Code of Federal Regulations, Part 70 is published as a document subject to codification.

44 FR 43280
Published 7/24/79
Effective II/21/79

10 CFR Parts 70, 73, and 150

Safeguard Requirements for Special Nuclear Material of Moderate and Low Strategic Significance

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations for physical protection of plants and materials, including nonpower reactors, to require physical protection measures to detect theft of special nuclear material of moderate and low strategic significance. The amendments are being made in the interest of common defense and security. The measures are designed to provide a level of protection equivalent to that recommended in Information Circular/225/Rev. 1 (INFCIRC/225) published by the International Atomic Energy Agency (IAEA). The amendments specify protection requirements for special nuclear material at fixed sites, including nonpower reactors, and for special nuclear material in transit.

Physical protection requirements for independent spent fuel storage installations and nuclear power reactors are presently covered under 10 CFR § 73.40, § 73.50, and § 73.55 and therefore are not included in these amendments.

Concurrent with the publication of the amendments, the NRC is publishing a regulatory guide entitled, "Standard Format and Content for the Licensee Physical Security Plan for the Protection of Special Nuclear Material of Moderate or Low Strategic Significance." This document has been prepared as an aid to uniformity and completeness in the preparation and review of the physical security plan for special nuclear material of moderate and low strategic significance. In addition, a value/impact assessment of these amendments has been prepared and placed in the Commission's Public Document Room at 1717 H Street, NW., Washington, D.C.

EFFECTIVE DATE: November 21, 1979.

Note.—The Nuclear Regulatory Commission has submitted this rule to the Comptroller General for review of its reporting requirement under the Federal Reports Act, as amended, 44 U.S.C. 3512. The date on which the reporting requirement of the rule becomes effective, unless advised to the contrary, includes a 45-day period which that statute allows for Comptroller General review (44 U.S.C. 3512(c)(2)).

FOR FURTHER INFORMATION CONTACT: Mr. J. A. Prell, Safeguards Standards Branch, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, (301) 443–5904 or Mr. C. K. Nulsen, Requirements Analysis Branch, Division of Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, (301) 427–4043.

SUPPLEMENTARY INFORMATION: On May 24, 1978 the Nuclear Regulatory Commission published in the Federal Register (43 FR 22216) proposed amendments to 10 CFR Parts 70, 73, and 150 of its regulations. Interested persons were invited to submit written comments and suggestions on the proposed amendments within thirty days after publication in the Federal Register. Based on the public comments and other considerations, the Commission has adopted the proposed amendments, with modifications as set forth below.

The effective physical protection amendments are designed to have overall equivalency to the recommendations of INFCIRC/225 Rev. 1, but there are differences in the detailed requirements. INFCIRC/225 Rev. 1 recommendations are designed to minimize the possibilities of theft or sabotage of SNM of moderate or low strategic significance. The effective amendments have been primarily designed to require early detection of theft of SNM of moderate or low strategic significance. However, in requiring early detection capabilities, these amendments deter the possibilities of theft or diversion. In the judgment of the Commission, the degree of protection afforded by the containment, monitoring and detection procedures required by these amendments provide equivalency to the INFCIRC/225 Rev. 1 recommendations for protection of theft or diversion of SNM.

Significant differences from the proposed rule published for comment on May 24, 1978 are: (1) Plutonium-Beryllium (PuBe) sealed sources would be exempted from the physical protection requirements; (2) Plutonium with isotopic concentration exceeding 80 percent in plutonium-238 would be exempted from the physical protection requirements; (3) package and vehicle search requirements at facilities where special nuclear material of moderate strategic significance is used or stored have been changed; (4) The period of time allotted for submittal of a licensee plan to implement these requirements has been changed from 60 days to 120 days after the effective date of the amendment. In addition, editorial and clarifying changes were made and some definitions added to clarify the intent of the regulations.

The following discussion pertains to items (1) through (4) above.

(1) PuBe sealed sources—Commenters stated that the cost of providing the required physical protection for PuBe sealed sources would be prohibitive from the point of view of the limited budgets available at universities where most of the sources are now located. Imposition of the proposed requirements, it was said, would result in the curtailment of the use of PuBe sources at some sites with a significant impact on the educational and research programs at those institutions. In view of the very small quantities of plutonium found in PuBe sealed sources (generally, from 16 to 161 grams) and the fact that potential adversaries wishing to obtain a 5 kg formula quantity of plutonium would have to commit separate acts of theft at a large number of widely separated sites without being detected, the Commission has decided that the threat to the common defense and security of this country was sufficiently low that physical security measures should not be required for PuBe sealed sources. There is an upper limit of 500 grams of plutonium to which this exemption can be applied because greater than a 500 gram accumulation of plutonium in this form invalidates the basis for this exemption. IAEA guidelines allow for such exceptions in the case of research type facilities.

(2) More than 80 percent Pu–238—The proposed rule has been amended to reflect that plutonium with isotopic concentration exceeding 80 percent in plutonium-238 would be exempted from the physcial protection requirements. This change corrects an oversight in the initially proposed amendments in which it was intended that such material would be exempted to be consistent with the definitions of Category II and III material in the IAEA document INFCIRC/225/Rev. 1.

(3) Search requirements—Package and vehicle search requirements at facilities at which special nuclear material of moderate strategic significance is used or stored have been changed. As revised, random searches are only required regarding items leaving controlled access areas, and not of those entering. The primary objective of entry searches is to detect materials which could be useful in sabotage. Since protection against sabotage is not within the scope of the proposed amendments, an entry search requirement is not necessary.

(4) Submission and Implementation of Plans—Several commenters stated that more time would be needed than the sixty days allowed for submission of physical security plans, or amendments to them, following the date the proposed amendments become effective.

The Commission agrees that more time may be required, especially in the case of licensees who have limited managerial and finacial resources, and has changed the submission date to be 120 days following the effective date of the amendment. In addition, the licensee is now required to implement the approved security plan within 240 days following the effective date of the amendment or within 30 days after the plan is approved, whichever is later.

Concurrent with the publication of the amendments, the NRC is publishing a

guide entitled "Standard Format and Content for the Licensee Physical Security Plan for the Protection of Special Nuclear Material of Moderate or Low Strategic Significance." The guide is being published for a sixty-day comment period and will be reissued with comments taken into consideration. The amendments to 10 CFR Parts 70, 73 and 150 would become effective at this time (120 days after publication) (November 21, 1979). Licensees would therefore have 240 days after publication of the amendments to submit their plans. The plan would have to be implemented 30 days after approval by the Commission or 360 days after (date of publication in the Federal Register) (July 24, 1979)

Another area of comment dealt with employee screening. Some of the licensees interpreted the screening requirement to call for a full field background investigation of all personnel entering the controlled access areas where the material is used or stored. The wording of the rule has been revised to more clearly indicate that the requirement is merely one requiring a screening based on knowledge of persons permitted access rather than a formal security investigation. The guidance package being issued with the rule explains more fully the intent of this requirement.

There was one other area of comment for which no specific changes were made to the amendments but which is of significance. These comments dealt generally with the technical jutification for the proposed amendments.

Many of the commenters questioned the technical justification for the proposed amendments on the basis of the a lack of detailed information regarding the threat; the additional costs of implementation they perceived to be incommensurate with only marginal improvements in physical protection; and the impacts on the licensees' ongoing educational and research programs. Particular attention was focuses by some commenters on the physical protection requirements for low enriched uranium.

The technical justification for the U.S. adoption of the proposed amendments is contingent on both domestic and international factors, which are closely interrelated. Current NRC physical protection regulations apply primarily to strategic special nuclear material (uranium enriched in the isotope U-235 to 20% or greater, U-233, and plutonium) in quantities of five formula kilograms or greater. There are no specific physical protection requirements for quantities in lesser amounts. Yet, it can be properly argued that a 4.9 formula kilogram quantity of SNM is about as important a quantity as 5.0 kilograms. Multiple thefts of such materials in close to formula quantities could result in the accumulation of more than a formula quantity. The proposed detection requirements are considered to provide sufficient protection with minimum added cost so as not to affect educational and research programs. Since the requirements are of a detection nature rather than prevention, characterization of the adversary in the regulations was deemed not to be necessary.

In regard to low enriched uranium (LEU) (enrichments less than 20%), clandestine enrichment to higher levels may go beyond the capability of subnational terrorists, but it does not go beyond the capability of other governments. Unless properly safeguarded, low enriched uranium could be stolen on behalf of foreign governments and enriched to explosive useable levels after it is smuggled out of the U.S.

The Nuclear Non-Proliferation Act of 1978 specifies that NRC shall promulgate regulations which assure that physical security measures are provided to special nuclear materials exported from the United States without specifying whether the materials are low enriched uranium or high enriched uranium. Pursuant to this legislation, the Commission has promulgated 10 CFR Part 110.43 which provides among other things that:

"(b) Commission determinations on the adequacy of physical security programs in recipient countries for Category II and III quantities of material will be based on available relevant information and written assurances from the recipient country or group of countries that physical security measures providing as a minimum protection comparable to that set forth in INFCIRC/225 will be maintained."

While the proposed amendments would provide a needed extension of domestic physical protection to special nuclear materials for which the level of physical protection required was not previously specified, the full value of such protection could not be realized until similar protection is afforded all such material among the nations utilizing such materials. Physical protection measures similar to those proposed, which are based on the recommendations of the IAEA Information Circular INFCIRC/225/Rev. 1, have already been adopted by several countries.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Parts 70, 73, and 150 are published as a document subject to codification.

44 FR 47918
Published 8/16/79
Effective 9/17/79

Licensing of Production and Utilization Facilities; Facilities and Access for Resident Inspection

See Part 50 Statements of Consideration.

45FR14199
Published 3/5/80
Effective 3/5/80

Minor and Clarifying Amendments

See Part 1 Statements of Consideration

45 FR 18905
Published 3/24/80
Effective 3/24/80

Deletion of reference to Panama Canal Zone; Minor Amendments

See Part 4 Statements of Consideration.

45 FR 50705
Published 7/31/80
Effective 7/31/80
Effective Date 12/24/80 *
Safeguards on Nuclear Material-Implementation of US/IAEA Agreement

See Part 75 Statements of Consideration .

45 FR 55402
Published 8/19/80
Effective 11/3/80

Emergency Planning

See Part 50 Statements of Consideration

45 FR 65521
Published 10/3/80
Effective 11/17/80

Uranium Mill Licensing Requirements

See Part 30 Statements of Consideration

*Amended 45 FR 84967

45 FR 73012
Published 11/4/80
Effective Date: Upon the US/IAEA Safeguards Agreement's entry into force and publication of notice thereof in the Federal Register
Effective Date 12/24/80 *

Safeguards on Nuclear Material; Implementation of US/IAEA Agreement

See Part 75 Statements of Consideration

45 FR 74693
Published 11/12/80
Effective 11/28/80

Licensing Requirements for the Storage of Spent Fuel in an Independent Fuel Spent Storage Installation

See Part 72 Statements of Consideration

45 FR 76968
Published 11/21/80
Effective 2/4/81

Criteria and Procedures for Determining Eligibility for Access to or Control Over Special Nuclear Material

See Part 11 Statements of Consideration

46 FR 12193
Published 2/13/81
Effective 10/13/81

10 CFR Parts 70 and 73

Transient Shipments of Strategic Special Nuclear Material

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to withdraw the exemption from licensing requirements for carriers who possess formula quantities of strategic special nuclear material in the course of a transient shipment and require them to be responsible for assuring that the strategic special nuclear material is protected against theft and radiological sabotage. These carriers will be required, during stopovers at United States ports, to provide physical protection in accordance with a security plan. This amendment will bring carriers who possess formula quantities of strategic special nuclear material in the course of a transient shipment directly under NRC physical protection regulations. A transient shipment is defined as a shipment of special nuclear material originating and terminating in foreign countries, on a vessel or aircraft which stops at a United States port. These amendments are intended to assure that any transient shipments which may occur are provided physical protection equivalent to that currently required of domestic, import and export shipments. Consequently, physical protection requirements for all shipments of formula quantities of strategic special nuclear material within United States territory will be uniform.

EFFECTIVE DATE: October 13, 1981

FOR FURTHER INFORMATION CONTACT: Mr. C. K. Nulsen, Regulatory Improvements Branch, Division of Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Phone (301) 427–4181.

SUPPLEMENTARY INFORMATION: In accordance with the Commission's position that shipments of formula quantities of strategic special nuclear material (SSNM) should be protected in the interest of the common defense and security and public health and safety, the Commission published proposed amendments on January 8, 1980 (45 FR 1625) to 10 CFR Parts 70 and 73 of its regulations that would require carriers possessing formula quantities of strategic special nuclear material in the course of a transient shipment to provide physical protection for the material during stopovers at United States ports. Interested persons were given until March 10, 1980, to comment on the proposed amendments.

The proposed amendments have been adopted in effective form without significant changes and will become effective 240 days after publication of this notice (October 13, 1981). In the interim period, the NRC will publish a regulatory guide in draft form entitled, "Physical Protection of Transient Shipments of Formula Quantities of Strategic Special Nuclear Material." This document has been prepared to provide guidance to persons covered by the general license issued by these amendments and will be published for a public comment period of sixty days. It is expected that the final regulatory guide will be published prior to the time the final rule becomes effective.

With respect to the proposed amendments, the resolution of the comments received is as follows:

(1) A comment received from the Department of State noted that § 70.20(d)(7) of the proposed amendments would require the use of armed personnel to protect transient shipments at United States ports and questioned the legal standing of foreign nationals to act as guards or escorts for the shipments.

A number of different avenues are available to licensees for obtaining the services of armed personnel to serve as escorts for transient shipments at a United States port. These are outlined in the draft guidance referred to above. The regulation neither requires nor prohibits the use of foreign nationals to provide the required escort services at the United States port. However, there are several factors which should be taken into consideration in determining whether or not foreign nationals could effectively protect a transient shipment. Language difficulties and lack of familiarity with local communications systems could possibly detract from the ability of foreign nationals to rapidly and effectively communicate with local law enforcement agencies or with those elements of the guard force who may be of local origin for purposes of requesting assistance when needed or for coordinating response activities. Local jurisdictions in the United States generally exercise control over the use and possession of hand guns or other firearms. If required permits for carrying weapons are not obtained in advance of the shipment, foreign nationals could not legally carry weapons off the shipment vessel or aircraft. Licensees intending to include foreign nationals in a guard force provided to protect a transient shipment would be expected, just as would any other licensee, to be able to demonstrate that the physical protection system provided meets the requirements of 10 CFR Part 73 (specifically, §§ 73.20 and 73.25, and the portions of the guard qualifications and training requirements of Appendix B corresponding to the guard duties required for transient shipments).

The draft guidance document referred to above has been revised to specifically reflect the foregoing considerations.

(2) Another State Department comment raised the question of classification of written security plans and proper access to the resultant classified information and urged the NRC to take steps to assure that plans are properly protected. Since the publication of the proposed amendments, new regulations in 10 CFR Part 95 have been promulgated under which the NRC has determined that certain information contained in physical protection plans and advance shipment notifications is classified

*Amended 45 FR 84967

Confidential National Security Information (CNSI) and must be protected accordingly.

Since some of the information contained in physical protection plans and advance shipment notifications generated by potential general licensees under the proposed amendments would be of a safeguards-sensitive nature, it is expected that potential general licensees would seek to protect the information from unauthorized disclosure on their own initiative since it is in their best interest to do so. This information, in the hands of the U.S. Government or a person in the United States, would be considered classified as CNSI, and thus, subject to the provisions of 10 CFR Part 95.

Plans generated by a foreign firm for the protection of its nuclear material while it is in the United States are treated as classified by NRC while the material is under U.S. control and those plans would probably be protected, in the interest of the owners of the SSNM, while under foreign control. The U.S. Government has no jurisdictional basis to classify information originated by and in the custody of a foreign firm until it reaches the United States. At that point, although classifiable, it would be declassified as necessary for the carrier to carry out the plan. Appropriate language has been included in the draft guidance referred to above regarding approaches for protection of classified information.

(3) A third comment questioned the Commission's finding that neither an environmental impact statement nor an environmental appraisal to support a negative declaration was required for the proposed amendments. The commenter cited a number of possible economic impacts and environmental hazards which he foresaw resulting from the proposed amendments (e.g., lost opportunities for commerce due to cargo ships avoiding U.S. ports, increase in freight charges to receivers of nonnuclear merchandise, and environmental risk of at-sea transfers attempted in order to avoid increased docking costs). The Commission has examined these stated impacts and hazards and determined that it is unrealistic to expect any of them to materialize as a result of the amendments, especially in consideration of the very low number of transient shipments known to have taken place in the past or projected to take place in the future. The Commission, therefore, finds no basis for changing its position on the need for environmental impact statements or environmental appraisals.

(4) The State Department also suggested that the proposed amendments be extended in scope to require protection for categories of material other than formula quantities of strategic special nuclear material (e.g., special nuclear material of moderate and low strategic significance, irradiated reactor fuel, etc.). This action was suggested in anticipation of the U.S. Senate ratification of the Convention on the Physical Protection of Nuclear Material, of which the U.S. is a signatory. Such an extension of the scope of the proposed rule would appear to be premature since the Convention has not yet been ratified. Also, an additional public comment period would be required if such a major change were made in the proposed amendments. Therefore, this suggestion will be addressed in a separate action.

Minor changes have been made in the amendments which follow for purposes of clarification and to maintain consistency with other NRC regulations. Some of the more significant changes are:

(1) The definition of "transient shipment" has been changed and a new section (§ 70.13a) added to 10 CFR Part 70 to clarify the nature of the exemption extended to persons carrying transient shipments of special nuclear material in foreign military aircraft. The previous definition was intended to indirectly exempt from the proposed regulations those persons carrying transient shipments of formula quantities of special nuclear material intended for military use. It was determined that it would be difficult for NRC inspectors to ascertain the intended future use of the material being shipped. Also, it was determined that the intended exemption should appear in a separate section of Part 70 with other exemptions. The revised amendment exempts persons carrying transient shipments who are subject to provisions of 49 U.S.C. 1508(a) (which requires State Department authorization to navigate aircraft of the armed forces of a foreign nation within the United States). This exemption, however, does not apply to plutonium since Public Law 94–79 restricts the NRC's authority to license, or exempt from licensing requirements, the air transport of plutonium in any form (except for certain medical applications and when in a container that has been certified as crash-proof). Since a transient shipment is the only situation contemplated under which a foreign military aircraft would enter the United States carrying special nuclear material, and since these shipments would be infrequent, of short duration, and under the direct control of the Department of State, the Commission has found that this exemption is not inimical to the common defense and security and does not constitute an unreasonable risk to the health and safety of the public.

(2) The wording of revised § 70.20a(a) and new § 70.20b have been changed to reflect recent changes made in § 70.20a by another rulemaking action.

(3) The notification procedures included in § 70.20b(d) have been changed to more closely conform to the corresponding requirements presently imposed on domestic shippers of similar types and quantities of material. Appropriate corresponding changes have also been made in the draft guidance.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of Title 5 of the United States Code, the following amendments to Title 10, Chapter 1, Code of Federal Regulations, Parts 70 and 73, are published as a document subject to codification.

46 FR 12695
Published 2/18/81
Effective 4/20/81

10 CFR Part 70

Domestic Licensing of Special Nuclear Material; General License Requirements for any Person Who Possesses Irradiated Special Nuclear Material (SNM) in Transit

AGENCY: U.S. Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The NRC is amending its regulations to issue a general license to any person who possesses irradiated reactor fuel in transit. Under the general license, a person who possesses irradiated reactor fuel in transit would be subject to certain requirements. This action would provide the NRC a level of direct control and direct inspection authority over irradiated reactor fuel shipments comparable to that now provided over formula quantities of strategic special nuclear material (SSNM) in transit. Notice is hereby given that this action meets the intent of the petition for rulemaking (PRM 73–5) filed by Mr. Samuel Edlow by letter dated June 29, 1979, with the Nuclear Regulatory Commission and therefore further action is not required.

EFFECTIVE DATE: April 20, 1981.

FOR FURTHER INFORMATION CONTACT: Mr. James A. Prell, Safeguards Standards Branch, Division of Siting, Health and Safeguards Standards, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 301–443–5904.

SUPPLEMENTARY INFORMATION: On May 8, 1979, effective amendments to 10 CFR Part 70 were published, 44 FR 28850, that removed the licensing exemption and issues a general license to carriers and other persons who have actual or

constructive possession (constructive possession is a form of legal possession of material in a shipment that does not require actual physical custody; it may be evidence through control over the shipment or by other means) of formula quantities of SSNM for the purpose of transport or storage incident to transport. This provided the NRC with a legal basis (in the absence of a specific license or other formal means) for inspecting shipments of formula quantities of SSNM in transit. Prior to issuance of the effective amendments, inspections were submitted to on a voluntary basis on the part of the carriers.

On June 15, 1979, effective amendments to 10 CFR Part 73 (Section 73.37) were published (44 FR 34466) that prescribed requirements for the physical protection of irradiated reactor fuel in transit. In their present form, these regulations do not subject to direct regulation carriers and other persons who possess (actually or constructively) irradiated reactor fuel for the purpose of transport or storage incident to transport. This creates the same situation for the shipment of irradiated fuel as existed for the shipment of strategic special nuclear material prior to the removal of the licensing exemption for carriers of that material (44 FR 26850). That is, the NRC has no legal basis for inspecting the irradiated reactor fuel shipments in transit to verify compliance with Section 73.37.

On June 29, 1979, Mr. Samuel Edlow, President of Edlow International Company, filed with the Nuclear Regulatory Commission a petition for rulemaking to amend 10 CFR Parts 70 and 73. The intent of this petition, which was assigned Docket Number PRM 73–5, was to make carriers of irradiated reactor fuel subject to a level of NRC control similar to that required of carriers of formula quantities of strategic special nuclear material.

In order to provide the NRC a level of control over irradiated fuel shipments comparable to that provided over formula quantities of SSNM in transit, the Commission is, therefore, amending its regulations to issue a general license to any person who possesses (actually or constructively) irradiated reactor fuel during transport. The general license would pertain only to the carriage or storage in transit of irradiated fuel subject to 10 CFR 73.37.

For this purpose, on March 12, 1980, the Nuclear Regulatory Commission published in the **Federal Register** [45 FR 15936] proposed amendments to 10 CFR Part 70 of its regulations. Interested persons were invited to submit written comments and suggestions on the proposed amendments within sixty days after publication in the **Federal Register**. The principal comments and the Commission's responses follow:

(1) Physical protection responsibilities of carriers—one commenter sought clarification as to whether or not the carrier was responsible for meeting the physical protection requirements of 10 CFR § 73.37.

This rule does not relieve the shipper of full responsibility for meeting the physical protection requirements of § 73.37. However, the carrier shall either assure himself or receive certification from the shipper that the requirements are being met. Paragraph 73.20a(e)(1) has been modified form the proposed amendment to clarify this meaning.

(2) Reporting requirements—two commenters suggested that all reporting requirements associated with lost or missing material be channeled through the Department of Transportation. The Department of Transportation, however, prefers that all reports be made directly to the Nuclear Regulatory Commission.

(3) Exemption from 10 CFR § 70.42—One commenter felt that general licensees should not be subject to the requirements of 10 CFR § 70.42 "Transfer of special nuclear material." He felt that since the licensee shipper was already subject to these requirements, making the general licensee subject to them would be redundant, accomplish little and add to the "bureaucratic nightmare." Paragraph 70.42(c) requires: (1) that the general licensee initially register with the NRC, and (2) that prior to transferring special nuclear material, the transferor verify that the transferee's license authorizes receipt of the type, form and quantity of material to be transferred. The Commission believes that this requirement is needed in order to help assure proper control of the material at all points of transfer. The Commission also believes that this will not present the general licensee with a "bureaucratic nightmare" because:

(1) the general licensee is required to register with the Commission only initially, and

(2) the general licensee can verify and obtain from the official records of the Commission or an Agreement State the identity of all the licensees it intends to deliver to and the scope and expiration dates of their licenses and registrations. Once obtained, this list only has to be updated occasionally as licenses expire or license conditions change or new receivers are added.

In light of the above, appropriate paragraphs of § 70.20a have been revised to issue a general license to any person who possesses (actually or constructively) irradiated reactor fuel in transit. The scope of the general license granted under the amendment is limited to possession only and is effective during the course of a shipment. The amendment does not affect the exemption for carriers and other persons under § 70.12 who transport other forms of special nuclear material subject to NRC regulations. Also, the amendment does not apply to transient shipments, that is, shipments that originate in a foreign country with destinations in a foreign country that transit the United States. Such shipments are the subject of a separate rulemaking procedure (see 45 FR 1625). The amendment codifies practices and procedures presently submitted to on a voluntary basis by most carriers and other persons. The amendment does not require the filling of applications with the Commission or the issuing of licenses to particular persons by the Commission.

The promulgation of this amendment does not result in any activity that affects the environment. Accordingly, the Commission has determined under the National Environmental Policy Act, the Council of Environmental Quality guidelines, and the criteria of 10 CFR Part 51, that neither an environmental impact statement nor an environmental impact appraisal to support a negative declaration for the proposed amendment to 10 CFR Part 70 are required.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and sections 552 and 553 of title 5 of the United States Code, the following amendments to Title 10, Chapter I, Code of Federal Regulations, Part 70 are published as a document subject to codification.

46 FR 13971
Published 2/25/81
Effective 3/27/81

Disposal of High-Level Radioactive Wastes in Geologic Repositories: Licensing Procedures

See Part 60 Statements of Consideration

46 FR 51718
Published 10/22/81

Effective 10/22/81 for Sections 2.744(e), 2.790(d)(1), 73.2(jj) and (ll), and 73.21(a), (b) and (c)(1). All remaining sections will be effective on 1/20/82.

Protection of Unclassified Safeguards Information

See Part 73 Statements of Consideration

47 FR 8
Published 1/4/82
Effective 1/4/82

Submittal of Installation Information Pursuant to US/IAEA Safeguards Agreement

See Part 40 Statements of Consideration

47 FR 23138
Published 5/27/82
Effective 5/27/82

Regional Licensing Program

See Part 30 Statements of Consideration

47 FR 27060
Published 6/23/82

Regional Licensing Program; Correction

See Part 30 Statements of Consideration

47 FR 30452
Published 7/14/82
Effective 10/12/82

Protection of Employees Who Provide Information

See Part 19 Statements of Consideration

47 FR 41336
Published 9/20/82
Effective 9/20/82

Minor Clarifying Amendments

See Part 1 Statements of Consideration

47 FR 57446
Published 12/27/82
Effective dates:
10 CFR 20.311 of Part 20 effective date is 12/27/83; 10 CFR Part 61 and all other changes effective 1/26/83.

Licensing Requirements for Land Disposal of Radioactive Waste

See Part 61 Statements of Consideration

48 FR 5886
Published 2/9/83
Effective 2/9/83
Correction published 2/28/83
Regional Licensing Reviews

See Part 50 Statements of Consideration

48 FR 8256
Published 2/28/83

10 CFR Parts 50 and 70

Regional Licensing Reviews

Correction

In FR Doc. 83-3326 beginning on page 5886 in the issue of Wednesday, February 9, 1983, make the following corrections.

On page 5887, first column, § 70.32 (c)(1), eighth line from the bottom, "discribed" should read "described"; second column, paragraph (d), sixth line, "§ 80.22(g)" should read "§ 70.22(g)"; third column, paragraph (g), eighth line, "licensees" should read "licensee"; and in the sixth line from the bottom, "70.30(g)" should read "73.30(g)".

48 FR 16030
Published 4/14/83
Effective 4/1/83

Regional Licensing Program; Further Implementation

See Part 30 Statements of Consideration

48 FR 22131
Published 5/17/83
Effective 6/16/83

10 CFR Part 70

Changes in Physical Security Plans; Licensees Possessing or Using Special Nuclear Material of Moderate and Low Strategic Significance

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations to allow licensees possessing or using special nuclear material of moderate and low strategic significance to make minor modifications to their physical security plans without prior approval by the Commission, provided the changes do not decrease the effectiveness of the plan. This amendment is necessary to remove an inconsistency in the regulations applicable to special nuclear material licensees.

EFFECTIVE DATE: June 16, 1983.

FOR FURTHER INFORMATION CONTACT: Andrea K. Barnold, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 443-5976.

SUPPLEMENTARY INFORMATION: On July 24, 1979, the Nuclear Regulatory Commission published a final rule (44 FR 43280) amending 10 CFR Parts 70, 73, and 150 to require physical protection measures to detect theft of special nuclear material of moderate and low strategic significance. One of the requirements of Part 70 is that applicants for licenses to possess or use special nuclear material must submit physical security plans. When Part 70 was amended to require submission of the plans by applicants for licenses to possess or use special nuclear material of moderate and low strategic significance, they were not included in the provision allowing minor changes to be made to physical security plans without prior Commission approval (see 10 CFR 70.32(e)). It is the Commission's belief that such licensees should be accorded the same privilege to make minor modifications that is accorded to licensees possessing larger quantities of strategic special nuclear material in order to have consistent regulations. Experience has shown the privilege to be a useful form of self-regulation and its extension to licensees possessing special nuclear material of moderate and low strategic significance is a step in reduction of regulatory burden.

Pursuant to 5 U.S.C. 553(b), the Commission for good cause finds that notice and public procedure on the amendment are not necessary, because the amendment confers a privilege on licensees possessing special nuclear material of moderate and low strategic significance that is now enjoyed by licensees possessing larger quantities of strategic special nuclear material. The amendment also relieves the affected licensees of the burden and license fee cost of submitting minor changes to security plans to the Commission for prior approval as formal license amendments.

Paperwork Reduction Act Statement

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget approval number 3150-0009.

List of Subjects in 10 CFR Part 70

Hazardous materials—transportation, Nuclear materials, Packaging and containers, Penalty, Radiation protection, Reporting requirements, Scientific equipment, Security measures, and Special nuclear material.

The authority citation for this document is sec. 161, Pub. L. 83-703, 68 Stat. 948, as amended (42 U.S.C. 2201).

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and Sections 552 and 553 of Title 5 of the United States Code, the following amendment to Title 10, Chapter 1, Code of Federal Regulations, Part 70, is published as a document subject to codification.

48 FR 32324
Published 7/15/83
Effective 8/15/83

Amendments Specifying Licensee Responsibility for Nuclear Materials and Procedures for Termination of Specific Licenses

See Part 30 Statements of Consideration

48 FR 34416
Published 7/29/83
Effective 7/29/83

Amendments Specifying Licensee Responsibility for Nuclear Materials and Procedures for Termination of Specific Licenses

See Part 40 Statements of Consideration

48 FR 39036
Published 8/29/83
Effective 9/28/83

Irretrievable Well-Logging Sources

See Part 30 Statements of Consideration

49 FR 9352
Published 3/12/84
Effective: Upon approval of OMB or 6/7/84.

Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions and Related Conforming Amendments

See Part 51 Statements of Consideration

49 FR 19623
Published 5/9/84
Effective 5/9/84

Information Collection Requirements; Display of OMB Control Numbers

See Part 0 Statements of Consideration

49 FR 19630
Published 5/9/84
Effective 4/2/84

Regional Licensing Program; Further Implementation

See Part 30 Statements of Consideration

49 FR 21699
Published 5/23/84
Effective 5/23/84

Information Collection Requirements, Display of OMB Control Numbers

See Part 0 Statements of Consideration

49 FR 24512
Published 6/14/84
Effective 6/7/84

Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions and Related Conforming Amendments

See Part 2 Statements of Consideration

49 FR 47823
Published 12/7/84
Effective 12/7/84

Minor Correcting Amendments

See Part 1 Statements of Consideration

≫ 50 FR 7575
Published 2/25/85
Effective 3/27/85

10 CFR Parts 70 and 74

Amended Material Control and Accounting Requirements for Special Nuclear Material of Low Strategic Significance

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its material control and accounting (MC&A) requirements for licensees possessing and using quantities larger than one effective kilogram of special nuclear material of low strategic significance. These amendments reform the MC&A regulations for fuel cycle facilities by establishing a grading of requirements between those applicable to low enriched uranium (LEU) and those applicable to more strategically significant forms of special nuclear material. These amendments will make the regulations more consistent with the low strategic significance of this material and will result in a significant reduction in costs for the affected licensees. Emphasis has been given to performance requirements rather than prescriptive requirements to allow licensees to select the most cost-effective ways to satisfy NRC requirements for LEU of low strategic significance.

EFFECTIVE DATE: March 27, 1985.

FOR FURTHER INFORMATION CONTACT: Dr. W.B. Brown, Chief, Fuel Facility Safeguards Licensing Branch, Division of Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 427–4043.

SUPPLEMENTARY INFORMATION:

Background

A new 10 CFR Part 74 is created which will eventually contain all the domestic MC&A regulatory requirements. As other existing MC&A requirements, which are currently found in Part 70, "Domestic Licensing of Special Nuclear Material," are revised they will be moved to Part 74. This will place the MC&A requirements in a format similar to Part 73, "Physical Protection of Plants and Materials." Specific safeguards program requirements will be found in Parts 73 and 74 with the general license requirements being retained in Part 70.

Seven low enriched uranium fuel fabrication and recovery facilities will follow the new Part 74. These seven facilities, who are authorized to possess and use more than one effective kilogram of special nuclear material of low strategic significance, are Babcock and Wilcox Co., Lynchburg, Virginia; Combustion Engineering, Inc., Windsor, Connecticut and Hematite, Missouri; Exxon Nuclear Co., Inc., Richland, Washington; General Electric Co., Wilmington, North Carolina; Westinghouse Electric Corp., Columbia, South Carolina; and the LEU scrap recovery operations at Nuclear Fuel Services, Inc., Erwin, Tennessee. All other current licensees subject to safeguards requirements in 10 CFR Part 70 will continue to follow Part 70 until the provisions of Part 70 applicable to them are transferred to Part 74. Any such transfer will be accomplished by public notice in the Federal Register.

The goal of this rule is to reduce the MC&A regulatory requirements for LEU

licensees to a level that is consistent with the safeguards risk associated with the low strategic significance of LEU. Under the current regulations, the major differences in the MC&A requirements for LEU and Strategic Special Nuclear Material (SSNM) are a longer inventory period and a higher de minimis inventory difference action threshold for LEU. The bulk of the other current requirements are essentially the same for LEU and SSNM.

On December 14, 1982, the Nuclear Regulatory Commission published proposed amendments to 10 CFR Part 70, on which this final rule is based, in the **Federal Register** (47 FR 55851). A discussion of safeguards risk associated with LEU can be found in that **Federal Register** Notice. Interested parties were invited to submit written comments and suggestions regarding the proposed amendments. Comments were received from four licensees, three private citizens, one professional group, one consulting firm, several NRC groups, and the Department of State, which coordinated comments from the Executive Branch.

Changes Made to Proposed Amendments to 10 CFR Part 70

1. The general reporting requirements for MC&A have been deleted from Part 70 and moved to a new Part 74. The previously proposed § 70.60 has been redesignated § 74.31.

2. The definition of "goal quantity" and reference to that quantity have been deleted. Licensees subject to Part 74 are required to detect losses of specified quantities of SNM. These loss detection quantities will be determined by the NRC on a site-by-site basis.

3. The first performance objective in the new § 74.31(a)(1) has been reworded.

4. The words "and use" have been added to the first sentence of § 74.31(a).

5. Licensees subject to § 74.31 are explicitly exempted from the recordkeeping requirements of § 70.51(b).

6. Explicit requirements have been added that the accounting records be based on measured values and that values with significant measurement bias be corrected.

7. The first sentence of the requirements for current knowledge of items has been rephrased for clarity.

8. Some definitions from Part 70 have been added to § 74.4.

9. The language in § 70.57 now explicitly shows that it does not apply to special nuclear material of low strategic significance.

10. Other minor changes have been made throughout the amendments.

Discussion of Changes Made

(1) In the current rule structure, the MC&A requirements have been interspersed among the safety and general licensing requirements of 10 CFR Part 70. These MC&A requirements are being moved to a new Part 74 of 10 CFR to avoid confusion with the safety requirements in Part 70, to allow the requirements to be presented in a more orderly manner, and to be consistent with the use of Part 73 for physical protection requirements. The MC&A requirements remaining in §§ 70.51, 70.57, and 70.58 apply to special nuclear material (SNM) of moderate strategic significance, strategic special nuclear material, and special categories of licensees possessing SNM of low strategic significance who are currently not required to have an approved MC&A plan. Performance-oriented regulations for these classes of licensees will be added to Part 74 as they become final and will eventually replace the MC&A requirements in Part 70.

(2) As indicated in the supplementary information accompanying the publication of the proposed amendments, comments were solicited from the Department of State. As a result of these comments, the term "goal quantity" has been dropped to avoid any confusion between the International Atomic Energy Agency's (IAEA) use of the term "significant quantities" when addressing a national level threat and the NRC's use of "goal quantity" when addressing our domestic level threat. Further, in keeping with the IAEA's inspection approach, the NRC will establish quantities for loss detection on a site-by-site basis. Guidelines for this process will be provided in the Acceptance Criteria for the LEU Reform Amendments.

(3) When the term "goal quantity" was dropped, the first general performance objective of § 74.31(a)(1) was reworded.

(4) The requirements of § 74.31 are not intended to apply to licensees who merely possess and store sealed containers of SNM. Thus, the phrase "and use" was added to the first sentence of § 74.31(a) to make that section only applicable to licensees who process the SNM in some manner.

(5) For licensees using SNM of low strategic significance in a quantity greater than one effective kilogram, the recordkeeping requirements in § 74.31(d) apply in lieu of the requirements in § 70.51(b). In response to the comments, this is now made more explicit.

(6) The wording of the amendments, as proposed, raises some question as to whether licensees continue to be required to make measurements of the material they possess and to correct for biases in the measurement systems. To make this clearer, two new capability statements were added. These new statements require that material values on record be based on measurements and that biases in the measurement systems be estimated and corrected for when they are significant.

(7) The first sentence of the capability statement dealing with current knowledge was reworded to avoid confusion which resulted over how the 14-day criterion was to be applied. The 14-day period is to be used to determine when an item must formally be entered into the record system for tracking items.

(8) The list of definitions in § 74.4 has been expanded to include appropriate ones from Part 70. More definitions will be added as the MC&A requirements for the other classes of SNM are moved to Part 74. Concerning terminology, Part 74 reflects the terms the Commission now prefers when referring to certain MC&A and statistical concepts. However, the language in Part 70 has not been changed. As the requirements for the other classes of SNM are revised and added to Part 74, the new terms will be used. The definitions in § 74.4 cross reference the existing Part 70 definitions where changes in terms have been made.

(9) A commenter suggested that § 70.57 be amended to exclude special nuclear material of low strategic significance. While this exclusion is implied in the amendment to § 70.58(a), § 70.57(b) was also amended to make it more explicit.

The Following Comments Did Not Result in Changes to the Proposed Amendments

(1) Several commenters made the assumption that the current knowledge requirement for items (proposed § 70.60(c)(4), now § 74.31(c)(6)) was only needed to assess losses of a goal quantity (e.g., 500 kg of uranium-235) or more, and thus, would not need to be sensitive to losses of less than a goal quantity of items.

The stated MC&A objectives in § 74.31(a) (2) and (3), "Resolve indication of missing material and aid in the investigation and recovery of missing material," give no specific quantity of material. A system which has no better discrimination capability than a goal quantity will not be very helpful in resolving any known thefts of smaller amounts. A current knowledge capability is needed to aid the NRC and other Federal and local authorities in determining the credibility of claims of material theft. NRC needs information to facilitate this type of determination in order to properly execute its legal responsibility to protect the public health and safety. If such a claim were true, the NRC needs to have a good estimate of the amount and form of the material involved. Also, if a theft has

occurred, the NRC must be able to determine if corrective action is required.

(2) Commenters suggested that an amendment similar to that made to § 70.58(a) should be made for § 70.51 (i.e., exclude all SNM of low strategic significance).

A blanket exclusion was not appropriate because some classes of SNM of low strategic significance (those excluded from § 74.31) are still subject to parts of § 70.51 as they were in the past. In response to the comments, § 70.51(b) is being amended to exclude licensees subject to § 74.31. The other paragraphs of § 70.51 not being amended are of a minor nature and no explicit exclusion from them is considered to be necessary.

(3) Commenters suggested the removal of the phrase "unless otherwise required to satisfy Part 75" from the inventory requirement of § 74.31(c)(5).

This phrase was retained because of concerns expressed by the Department of State and certain NRC groups. Part 75 contains the requirements necessary to satisfy the agreement between the United States and the International Atomic Energy Agency. It was always the intent that the more restrictive requirements of Part 75 would take precedence over those of Parts 70 and 74. Making this explicit in the amendments has no net effect on the licensee.

Use and Availability of Acceptance Criteria

In preparing the plan required by § 74.31(b), it is suggested that the licensee/applicant utilize both the rule and the acceptance criteria. The rule is written in general, performance-oriented language to give the licensee/applicant flexibility in designing a cost-effective system which makes best use of site-specific features. The purpose of the acceptance criteria document is to provide an explanation and amplification of the required, basic performance-oriented system capabilities in § 74.31, and to suggest the information that a typical licensee/applicant would include in a comprehensive plan. The acceptance criteria were developed from the viewpoint that conventional measures, as utilized today, may continue to be employed by the licensee/applicant. It should be noted that the NRC acknowledges that the licensee/applicant is free to use alternative measures to comply with the requirements of § 74.31. In this regard, the NRC also recognizes that various aspects in the acceptance criteria may not be applicable. Single copies of the Acceptance Criteria for the LEU Reform Amendments may be obtained from: Dr. W.B. Brown, Chief, Fuel Facility Safeguards Licensing Branch, Division of Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

Regulatory Analysis

The Commission has prepared a regulatory analysis of this final regulation. The analysis examines the cost saving and rationale for this regulatory action versus maintaining the status quo. The analysis is available for inspection in the NRC Public Document Room, 1717 H Street NW., Washington, DC. Single copies of the analysis may be obtained from: Dr. W.B. Brown, Chief, Fuel Facility Safeguards Licensing Branch, Division of Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

Environmental Impact

The material control and accounting requirements for licensees possessing and using quantities larger than one effective kilogram of special nuclear material of low strategic significance will be amended in two major ways.

1. Certain safeguards related record keeping and reporting requirements now found in Part 70 are moved to a new Part 74 in order to separate the safety requirements of Part 70 from safeguards requirements.

2. Material control and accounting regulatory requirements for low enrichment uranium licensees will be reduced to a level that is consistent with the safeguards risk associated with the low strategic significance of LEU. The major differences in the MC&A requirements are a longer interval between physical inventories and a larger de minimis quantity for the inventory-difference action threshold.

Pursuant to 10 CFR 51.22(c)(3) (ii) and (iii) a categorical exclusion is granted for amendments to Commission regulations which relate to recordkeeping and reporting requirements. The proposed amendments described in Paragraph 1 above, meet the eligibility criteria for this categorical exclusion. Accordingly, no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

For the following reasons the Commission has also determined not to prepare an environmental impact statement for the amendments described in paragraph 2 above, and in accordance with 10 CFR 51.32 and 51.34 finds that the proposed amendments have no significant impact on the environment:

1. The proposed rule will not result in changes in the licensees' processes or manufacturing procedures and therefore will not affect or alter any releases of effluents to the environment.

2. The proposed rule will allow the licensees' the flexibility to change certain measurement procedures to meet performance criteria set forth in the rule. Measurement procedures have no environmental significance.

3. The proposed rule will affect seven low enrichment uranium fuel fabrication and recovery facilities, all of which have undergone individual NEPA review.

The environmental assessment upon which the foregoing determination is based is included in the Regulatory Analysis for this rulemaking action, and is available for public inspection at the NRC Public Document Room, 1717 H Street NW, Washington, D.C. Single copies of the environmental assessment and finding of no significant impact are available from Dr. W.B. Brown, Chief, Fuel Facility Safeguards Licensing Branch, Division of Safeguards, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 427–4185.

Paperwork Reduction Act Statement

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget Approval No. 3150–0009 (for Part 70) and No. 3150–0123 (For Part 74).

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)), the Commission hereby certifies that this rule will not have a significant economic impact on a substantial number of small entities. This rule affects seven facilities that fabricate low enriched fuel, and is expected to result in an estimated savings for the industry on the order of $3.9 million per year. The facilities include Babcock and Wilcox Company, Lynchburg, Virginia; Combustion Engineering, Inc., Hematite, Missouri, and Windsor, Connecticut; Exxon Nuclear Company, Inc., Richland, Washington; General Electric Company, Wilmington, North Carolina; Westinghouse Electric Corporation, Columbia, South Carolina; and the LEU scrap recovery operations at Nuclear Fuel Services, Inc., Erwin, Tennessee. These companies are dominant in their service areas and do not fall within the definition of "small entities" set forth in the Regulatory Flexibility Act or by the Small Business Administration in 13 CFR Part 121.

List of Subjects

10 CFR Part 70

Accounting, Hazardous materials-transportation, Material control and accounting, Nuclear materials, Packaging and containers, Penalty, Radiation protection, Reporting and recordkeeping requirements, Scientific equipment, Special nuclear material.

10 CFR Part 74

Accounting, Material control and accounting, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Special nuclear material.

Under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 552 and 553, the following amendments to 10 CFR Part 70 and a new 10 CFR Part 74 are published by the NRC as a document subject to codification.

50 FR 12221
Published 3/28/85
Effective date will be published at a later date.

Implementation of the Convention on Physical Protection of Nuclear Material

See Part 40 Statements of Consideration

50 FR 14692
Published 4/15/85
Effective 4/1/85

Regional Nuclear Materials Licensing for Certain Federal Facilities

See Part 30 Statements of Consideration

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Title 10 — Chapter I
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UNITED STATES NUCLEAR REGULATORY COMMISSION

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